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TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

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MR. PRESIDENT AND GENTLEMEN,—In the first lecture I dealt especially with the relations between medicine and magic, using the latter term for two kinds of process: that in which disease is ascribed to direct human agency, and that in which the methods of treatment involve no element of appeal to higher powers in spite of the fact that disease is ascribed to the action of spiritual beings.

PROCESSES OF DIAGNOSIS AND PROGNOSIS.

It may have been noted that little was said in that lecture about the processes of diagnosis and prognosis. Although the nature of the belief in causation directly determines the mode of treatment, the discovery of the cause usually needs no special rite. It is inferred immediately by the patient or his friends from their knowledge of acts on the part of the patient which would have offended a man or spirit believed to have the power of inflicting disease.

Where definite rites are performed for the purpose of diagnosis these often have a religious character, even where the treatment appears to be entirely of a magical order. Thus, in Murray Island, in Torres Straits, disease is believed to occur by the action of certain men who through their possession of objects called *zogo* and their knowledge of the appropriate rites have the power of inflicting disease. Thus, one *zogo* is believed to make people lean and hungry and at the same time to produce dysentery; another will produce constipation, and a third insanity.

When anyone falls ill the patient may know at once whom he has offended so that no special process of diagnosis is necessary, but often the patient or his friends have recourse to certain men who own a shrine called *tomog zogo* where a process of divination is carried out. This shrine consists of a number of stones and shells arranged so as to form an irregular plan of the island.[2] The place is visited at daybreak by those who have special knowledge. If a lizard comes out of one of the shells, the house or village which that shell represents will indicate the abode of the person by whom the sickness has been produced. If two lizards come from different shells and fight, the shell from which the victorious lizard had emerged would represent the abode of the sorcerer. This shrine was also consulted for the purpose of prognosis, a dead lizard being a sign of the death of the patient. Various other forms of divination are practised. In Murray Island, and still more in the western islands of Torres Straits, the skulls of relatives are used for this purpose, the ghost to whom the skull belonged in life giving the desired information in a dream.[3]

In the case of the *tomog zogo* of Murray Island we do not know enough of the attitude towards the animals who provide the material for diagnosis to enable us to say how far the process can be called religious, but the reference to the skulls of ancestors which takes place in these and other islands of Torres Straits certainly belongs to the category of religion, forming part of a religious cult of ancestors.

The cult of ancestors is still more definite in Melanesia. In many parts of this ethnographic province this cult provides an example of religion of a relatively high order in which the elements of supplication and propitiation are clearly present. It may be noted that here again the appeal to the ghosts of ancestors may take place for the purpose of diagnosis in rites which have otherwise a definitely magical character.

Methods of prognosis are even more apt to have a purely religious character. Thus, when a chief in the island of Ambrim in the New Hebrides is gravely ill, little seems to be done by way of treatment, but the son or brother of the sick man takes a pig to a heap of stones called *worwor* which had been built when the chief acquired his rank. After killing the pig on the *worwor* it is left there as a gift for the ghosts of the chief's ancestors. That night the ghost of the father of the sick man will talk to his son or brother in his sleep and will say whether the sick man will or will not recover. In the latter case, the people may not be content with the adverse prognosis, but will kill a second pig of a kind more valuable than the first in the hope of obtaining a more favourable answer. At the same time prayer is offered to the ancestor to allow the sick man to stay with his friends. The only treatment employed is to rub the sick man, but this is evidently of little account beside the strictly religious practices of divination by dream and of prayer by which the people seek to discover and, if need be, attempt to avert a fatal result.

It is, I think, a matter of interest that the aid of superhuman or divine powers should show itself so definitely in connexion with prognosis. It is instructive that this difficult and uncertain art should in such a people as the Melanesians bring out more clearly than any other aspect of their leechcraft the close interdependence of medicine and religion.

DISEASE ATTRIBUTED TO INFRACTION OF TABOO.

The close relation between the practice of medicine and the cult of dead ancestors exists all through Melanesia, but probably the combined rites have nowhere reached a greater pitch of elaboration than in the western islands of the British Solomons, where the subject was carefully studied by Mr. A. M. Hocart and myself some years ago.[4]

In the little island of Mandegusu or Eddystone, where Mr. Hocart and I spent several months, we found between the treatment of disease and certain religious practices, especially that of taboo, a connexion so intimate that the account of medical practice is at the same time an account of taboo. The relation between the two is so close that it would be impossible to deal with one independently of the other. Nearly every disease which occurs in this little island is ascribed to the infraction of a taboo on the fruit of certain trees, especially the coconut and betel-vine, the taboo as well as the

[1] Lecture I. was published in THE LANCET, Jan. 8th, 1916.
[2] Rep. Cambridge Exp. to Torres Straits, vi., 1908, 261.
[3] Ibid., v., 362, and vi., 266
[4] I am greatly indebted to Mr. Hocart for his permission to publish this preliminary extract from our joint work.

sign by which it is known being called *kenjo*. The process of *kenjo* has a large number of varieties, each variety being the property of a man or small group of men, the right to practise being acquired, partly by purchase from, partly through instruction by, one already in possession of the art. The knowledge thus acquired concerns a number of rites, one carried out when the taboo is imposed, another when it is removed, and still another to allow fruit taken from tabooed trees to be used. In addition, a number of rites are learnt by means of which to cure or ameliorate the disease which falls on one who uses fruit from the tabooed trees without the performance of the rites which should accompany its removal. Each of these rites has a special name, *salanga* being that used for the therapeutic process. With certain exceptions all belong to the same man or group of men. Thus, it is only a man who is able to impose or remove the taboo who is able to treat the disease produced by its infraction, and, as we shall see shortly, there is a close resemblance between the rites connected with the process of taboo and those of the more strictly medical kind.

Mr. Hocart and I found about a hundred examples of such conjoined processes of taboo and medicine, and obtained a record of more than sixty. The following is an example of one of these processes—namely, that connected with the taboo called *kirengge*, the infraction of which produces epilepsy and other convulsive seizures.

The sign of the *kenjo* is put up on or by the side of the tree or trees to be tabooed and consists of several plants, the number of leaves or shoots of each plant being usually four, the sacred number of the island. The taboo-sign of *kirengge* also includes a stone and a coral, both of which irritate the skin when touched, as well as the butterfly called *kirengge*, the common use of this word for the butterfly and epilepsy being due to the resemblance between the movements of the insect and those of the disease.

The leaves and other objects are put in a forked stick by the side of the tree to be protected with the following formula: "This is yours, ye spirits of the *kenjo;* this yours, ye four old women, four old women who knew the *kenjo*. Ye four old women in Mbakia, be favourable. Noemali, be favourable. Kiambakia, Tupombakia, Saemali, Mbukumenia. Grant my prayer against the man who steals the *kenjo*. Ye two *lipa*, grant my prayer." The proper names mentioned in this formula are those of dead women who once knew the process, while the fifth is that of a special *tomate* or ghost, the *tomate kirengge*, apparently a personification of epilepsy derived perhaps from some dead man who suffered from the disease. The *lipa* is a special kind of fish.

If the owner of the tree wishes to use any of its fruit four sprigs of a plant called *nyou* are swept over the fruit with the words, "I sweep it down to throw it away. Do not return to this man. Go away to thy mother; go away to thy father. Go away." These words indicate that some influence is thus removed from the fruit, and there is reason to believe that this influence is that of the *tomate* or ghost by whom epilepsy is believed to be produced.

If it is desired to remove the taboo altogether from the tree the leaves and other objects making up the *kenjo* sign are thrown away in some unfrequented spot, so that there is no danger that it shall be trodden upon, a proceeding which is believed to have fatal results. When the *kenjo* is removed the following formula is uttered:—"Depart and go to the sky, do not remain on earth, thou spirit of the *kenjo*. Do not come back again. By and by return upon the head of the man who gives me an arm-ring. Look after the man who does not give me one, thou spirit of the *kenjo*. Depart. Be cooled in the fresh water. Depart, looking to the sun; depart, looking at the sky; go up and adhere to the thunder that sounds in the sky. Go back, not to return. Depart."

When anyone suffers from epilepsy or other convulsive seizure which is recognised as *kirengge*, he and his friends consult one known to have the power of imposing the *kenjo kirengge*.

This man visits the patient and strokes him from the head downwards with four leaves called *nyou*, some moss, soot and scrapings of wood, uttering the formula: "Stroke away. Stroke down and away. Cease thou. Let the man live; do not return. They have given me a good ring." The last clause of this formula and two in that used in removing the taboo refer to the fee, the chief money of the island consisting of arm-rings. The patient is then fumigated with the smoke of certain leaves and the patient sniffs the smoke while the leech utters over him the words: "Be favourable, thou ancient woman. Thou new spirit. Ye four ancient women." Leaves are then put round the neck of the patient with the words "Be favourable, thou. Favour this man. Let him live." A fillet is then put round the head of the patient and a girdle of leaves over his shoulder with the words, "Be favourable and let the fits cease." After saying these words the leech leaves the patient and goes away without looking back. This treatment is carried out on the last four days of the waning moon. It is performed on two successive days; then a day is left for the spirit or spirits of the *kenjo* to work and then on the fourth day the rites are again performed, this setting aside of the third day for the action of the higher powers being a regular feature of the *salanga* process of a *kenjo*. At the end of four months the whole process is repeated.

At the end of the treatment four small puddings are burnt on a fire by the leech with the words, "Here is the pudding for you, the spirit of *kirengge*. Be favourable. Let this man go. Let me not return hereafter." Four other puddings are put in the thatch of the patient's house.

The Religious Element.

The religious element in these rites is obvious. The note of supplication runs through all the formulas, which can definitely be regarded as prayers to beings who have the power to withhold that for which they are asked. The burnt-offering at the end of the whole proceedings has clearly a propitiatory character, and may also be regarded as a thank-offering to the ghostly being or beings through whose intervention the successful treatment has been brought about.

The special point of interest, however, in these proceedings is the intimate blending of the therapeutic process with the institution of taboo which both in this and other parts of Melanesia has a definite religious character. Disease is held to be the result of the infraction of a taboo imposed in the name and under the sanction of the ghosts of the dead. Taking the fruit of trees so protected is not punished by the offender's fellow-men, but punishment comes directly from the higher powers without any human intervention. The rites of the leech are only the means by which the help of these higher powers is obtained. They are designed to remove the misfortune which has followed the breaking of the taboo, which must be regarded as a sin rather than as a crime. Though I have called the human agent a leech he might more fitly or just as fitly be regarded as a priest whose special privilege it is to call on the higher powers to remove the penalty which the sufferer has brought upon himself by his sacrilege. Though the arm-ring given as a fee is kept by the leech, it is regarded as given to the spirits through whose activity the cure is brought about.

In addition to their beliefs in the production of disease by the ghosts who watch over tabooed trees, the natives of Eddystone Island also believe in a number of beings with special names, such as Mateana, Sea, Ilongo, Paro, Mbimbigo, to whom the power of producing disease is ascribed. These beings are personifications of natural phenomena such as thunderbolts, shooting stars, and the

rainbow, and most of them have special haunts often associated with the presence of shrines. Intrusion on these haunts is one of the causes to which disease is ascribed, but these beings are believed to inflict disease quite apart from any offence on the part of the victim. The most frequent mechanism, however, by which they are believed to produce sickness is through the breaking of a taboo. When a man falls ill with symptoms ascribed to Mateana it is supposed that the disease has been inflicted by Mateana owing to the infraction of a special taboo associated with this being and called *kenjo* Mateana. It is assumed that Mateana would not have afflicted the sufferer with fever if he had not broken the taboo associated with this being. It is probable that we have here an example of fusion between two different beliefs, one in the production of disease by a personification of the thunderbolt and another according to which disease is ascribed to a transgression of the institution of taboo.

RELIGIOUS CHARACTER ACQUIRED BY MAGICAL PROCESS.

I hope to deal with this process of fusion on another occasion. All that I need point out now is that both the elements in this process of fusion are clearly of a religious character. Two sets of beliefs concerning the causation and treatment of disease have been unified without in any way destroying the religious character of the product of the fusion. There are, however, examples in Eddystone Island in which a similar process of fusion has given a religious character to processes for the production of disease which would otherwise fall clearly into the category of magic. Thus the breaking of one kind of taboo exposes the transgressor to the action of one of a number of men called *njiama*, whose powers closely resemble those ascribed in many parts of the world to the evil eye. One who breaks this taboo falls ill with a set of symptoms which are believed to show the action of a *njiama*. In some of these cases blood gushes from the mouth of the patient, who dies at once, but in slighter cases there is a definite rite of treatment which follows lines similar to those of other curative rites connected with taboos.

The infraction of another *kenjo*, *kenjo mba*, brings as its consequence a disease ascribed to the action of a sorcerer called *mba*, who is believed to produce disease by acting on a fragment of food or an object which has been used by the person on whom it is intended to inflict illness, the case thus falling into the third category of magic described in my first lecture. The action of a *mba* can take place quite independently of the breaking of a taboo, but the tendency of the people to regard disease as a punishment for sin is so strong that a sorcerer is not supposed to be able to effect his purpose unless his victim puts himself in the wrong by breaking a taboo.

The acquirement of a religious character by a process which is primarily of a magical kind shows itself in another way in connexion with the sorcery of Eddystone Island. When a person is afflicted with illness believed to be due to the action of a *mba*, the essential part of the treatment consists in the recovery of the fragment of food or other object, called *penupenu*, by means of which the sorcerer acts upon his victim. This *penupenu* may be recovered in two ways. In one the relatives of the patient go to a man reputed to have the power of divination in respect of this condition. The diviner holds up an arm-ring and recites the names of all the persons believed to possess magical powers, and when one of the names is mentioned the arm-ring begins to revolve. The person of the sorcerer having been thus revealed, the relatives visit him and accuse him of the deed. The suspected man may confess at once and restore the hidden *penupenu* to his victim. If he refuses to confess he is suspended by one arm to the bough of a tree. As a rule a confession soon follows, but if there is long delay it is concluded that some mistake had been made in the divination by which the diagnosis was reached and the suspended and suspected person is released. It may be noted that the patient in such a case will recover because his mind is freed from the idea that his illness is due to the action of a sorcerer.

This mode of procedure departs from that proper to magic in the recourse to divination by the arm-ring, a process which definitely depends on the agency of an ancestral ghost. The suspension of the supposed sorcerer has the character of an ordeal, but with no obvious religious character. In the other mode of procedure in cases in which the action of a *mba* has been diagnosed, the religious character is evident. A man with especial knowledge and powers appeals to certain spirits called *tomate kuri* who are believed to be able to find the *penupenu* in order to restore it to the sick man, the recovery of the *penupenu* being accompanied by rites similar to those by which the diseases incurred through breaking of a taboo are cured.

The religious character of the medical art is thus so strong in Eddystone Island that procedures which are primarily of the same order as the magic of other places are both diagnosed and treated by means involving the supplication and propitiation of the spirits of the dead who are the chief objects of the religious rites of the people. There seems to have been in action a process of unification whereby the most diverse modes of regarding disease, modes which clearly belong to wholly different categories elsewhere, have been brought under one head in respect of diagnosis and treatment. The same holds good to a certain extent of the beliefs in causation, in that it is held that the production of disease by human agency would not be effective unless the sufferer had rendered himself liable to such maleficent action by his transgression of a religious ordinance.

This close relation between religion and the production and cure of disease occurs in many parts of Melanesia. Thus, in those islands which possess the institution of totemism, disease is said to follow any infraction of totemic ordinances, such as killing or eating the totem. Since these ordinances have the nature of taboos, we are again brought into contact with the relation between medicine and taboo. In the New Hebrides, where taboo is especially associated with certain complex organisations in which men rise from rank to rank by the killing of pigs, the transgression of these taboos brings sickness in its train. This religious character of leechcraft does not, however, stand alone in Melanesia, but is often accompanied by magical practices of the most definite kind. In some places, as in the Banks and Torres Islands and probably in New Britain and New Ireland, these take the most important place in the lives and thoughts of the people. In other parts the religious aspect of leechcraft is predominant, and, as we have already seen in Eddystone Island, this predominance may be so great that magic may

become altogether subordinated to that view of disease according to which it is regarded as a punishment for sin.

INDEPENDENT OCCURRENCE OF DISEASE.

I must now consider briefly those cases in which disease is believed to arise independently of any action on the part of human beings or of higher powers. This belief exists in many parts of Melanesia and New Guinea, and is probably universal, though it has attracted little notice beside the more striking customs which show the relation of leechcraft with magic and religion.

The diseases thus regarded are such as we are accustomed to group together as "minor ailments." It is especially when disease appears to threaten life that people begin to think of human or spiritual agency. As among ourselves, these "minor ailments" are largely treated without the aid of any specialised practitioners, and by measures which correspond with our domestic remedies. Thus, Professor Seligman tells us[5] that among the Sinaugolo of New Guinea a sorcerer is only consulted when ordinary treatment has been found of no avail.

In some cases the beliefs which underlie the treatment of the grave examples of disease are also concerned in the treatment of these minor ailments. Thus, in Eddystone Island certain sores on the limbs which are believed to "come of themselves" are yet treated by measures similar to those employed in diseases ascribed to the infraction of a taboo, and one such treatment is accompanied by the burnt-offering to spiritual beings which forms a feature of the curative rites of a taboo.

Because certain cases of disease are not ascribed to direct human or spiritual agency, we must not conclude that they therefore fall within the domain of what we should call "natural" causation. If we inquire into the beliefs concerning the causation of these minor ailments in such a place as Eddystone Island, we are told that they are believed to come of themselves and are not, therefore, the occasion of rites such as naturally follow disease ascribed to the neglect of religious injunctions. It would seem that these diseases attract little attention and do not afford material for speculation. It is true that many of the troubles thus believed to "come of themselves" are common and a source of great discomfort, though, as a rule, they do not threaten life. It is a question whether it is not their very frequency which takes them out of the magical and religious spheres. It is the exceptional, or at any rate the less habitual, incidents of life which tend to excite the speculations of mankind,[6] and occurrences so frequent in the tropics as the outbreak of sores on the limbs tend to remain without the circle of medico-religious interest just as our own colds and other habitual ailments remain to a large extent without the scope of our own medicine.

VARIETY IN LEECHCRAFT.

The belief in the occurrence of disease independently of human or spiritual agency introduces an element of variety into the leechcraft of savage peoples. Even when it is decided that some human or spiritual agency has been at work, there may still remain ample scope for variety in the treatment adopted. If we can judge by the following experience in Eddystone Island, such peoples as the Melanesians put their faith in many doctors and are not content with one physician or one remedy.

A man who had acted as one of our assistants in this island fell ill with apical pneumonia. After he had been ill for a few days I heard that he was anxious to be treated by me, and I attended him for the rest of his illness. He was already being treated by a noted leech of the island, Kundakolo, to whom I owe much of my knowledge of Eddystone medicine; on one of my later visits another of our assistants, also a noted leech, who went with me, carried out a course of treatment consisting of rubbings, spittings, and prayers, as soon as I had finished my interview, his treatment being designed to remedy the sweating which was at that time the chief cause of complaint. I thus knew during my attendance on the patient that I had two rivals in my art, but it was only after the patient had recovered that we learnt there had been at least a dozen. The first diagnosis had been that the patient was suffering from sorcery, or *mba*, and three different leeches were called upon in succession to carry out different forms of treatment for this condition. I then began my visits, but at the same time two other practitioners were called in who performed two other "cures" for sorcery. The diagnosis of *mba* was then given up, this being about the time of the crisis, and a woman then carried out the treatment for *njiama* on the supposition that the patient had fallen under the spell of the evil eye. This was followed by a treatment assigned to cure a symptom ascribed to a being named Ave, whom we shall meet again shortly. This was followed by three separate "cures" for a condition called *tagosoro*, usually produced by the action of the beings called Mateana and Sea. As these were not wholly successful, the original diagnosis of *mba* was made the basis of the next treatment. A month later the patient was considering whether he would not call in another practitioner to treat him again for *tagosoro* on account of his failure to recover his strength completely. At one stage of illness, when the patient was delirious and insisted on walking about naked, his friends had considered the propriety of calling in a practitioner skilled in the treatment for the infraction of *kenjo tuturu*, which has as its result a condition of insanity ascribed to beings living in the bush called *tuturu*.

DIFFERENTIATION OF LEECH FROM PRIEST.

The high degree of specialisation of medical function which exists in Eddystone Island may serve as an introduction to a subject I have until now left on one side. In my first lecture I stated that one of the means by which it is possible to distinguish medicine from magic and religion is an inquiry how far the leech is differentiated from the sorcerer and the priest. In the area with which I am especially dealing in these lectures it may be said at once that there is little evidence of such differentiation. In Australia, New Guinea, and Melanesia it would seem that the simpler remedies of which I spoke just now may be used by anyone, there being in this respect no differentiation of the leech from the general body of the people. Those who combine the practice of medicine with that of magical or religious rites usually acquire their art by a special process either of initiation or instruction, and in Melanesia such knowledge has always to be purchased. The most complete instruction

[5] Jour. Anth. Inst., 1902, xxxii., 300.
[6] Cf. W. H. R. Rivers, Folk-lore, 1912, xxiii., 307.

in any branch of medico-magical or medico-religious art is of no avail to the pupil unless money has passed from himself to his instructor. This instruction and purchase, however, nearly always include both the production and cure of disease where disease is ascribed to human agency, and the power and knowledge to perform rites other than those of a curative nature where medicine is allied with religion.

In Eddystone Island, however, a distinct step has been taken towards the differentiation of the leech from the priest. A man who buys the knowledge which enables him to impose a taboo necessarily buys at the same time the knowledge of the process by means of which to treat the illness which follows infraction of the taboo. It does not follow, however, that he uses this part of his knowledge. Certain men of the island have acquired a special reputation for success in the application of remedies, such men being called *tinoni salanga*. In these *tinoni salanga* we have clearly present the beginning of the differentiation of the leech from the priest. It may be interesting to mention some of the conditions which seem to have brought about this distinction. One is that a *tinoni salanga* who wishes his treatment to be successful should use a special kind of shell-instrument, called a *rikerike*, with which to cut and scrape roots or other ingredients of his pharmacopœia. One who steps over this instrument angers the *tomate* or ghostly ancestor from whom the leech derives his powers, the ghost showing his anger by the infliction of illness. Owing to the danger so incurred men who have bought the knowledge of a taboo will sometimes decline to use their knowledge of the associated treatment and leave that part of their art to others willing to take the risk. Another deterrent is the need for sexual abstinence on the part of a leech, especially in certain rites such as those for the cure of ulcers.

There is another indication that medicine in the strict sense of the term is becoming dissociated in Eddystone Island from the religious attitude. The influence of the being called Mateana shows itself in the occurrence of fever, pain, and weakness, this complex of symptoms being called *tagosoro*. At the present time there seems to be a distinct tendency to diagnose and treat *tagosoro* as a morbid entity independently of any belief in the anger of Mateana or the transgression of a taboo. This was probably the case in the three treatments for *tagosoro* carried out on the patient I have already mentioned, while the treatment for symptoms ascribed to Ave may also have been of a similar nature. It is possible, however, that this modification of the leechcraft of Eddystone Island is due to recent European influence. This may also be true of the movement towards specialisation of the leech, for one of the first results of such external influence is to lower resistance to the dangers and hardships which so often accompany the religious and magical rites of savage man.

It must be noted that the widespread failure to distinguish the leech from the sorcerer or priest is not due to any failure in the specialisation of medical function itself. Indeed, the matter is rather the other way. Such people as the Papuan or Melanesian have carried the differentiation of medical function in some respects to a far higher pitch than even we have reached in our highly specialised medical art. In Eddystone Island the treatment of different diseases is so highly specialised that one man will treat rheumatism, another fever, a third epilepsy, and a fourth insanity, although in each case the cure of disease is intimately associated with certain religious functions. An example of similar specialisation in Torres Straits has already been given in this lecture, and still another example is found in the island of Tami on the north-eastern coast of New Guinea, where one man knows how to cure pain in the chest, another pain in the abdomen, a third rheumatism, and a fourth catarrh.[7] Specialism is thus present in a pre-eminent degree, but this specialism has taken a direction which has probably been antagonistic to the development of that kind of differentiation of social function which among ourselves after centuries of progress has made medicine a wholly independent department of social life.

EPIDEMIC DISEASE.

A few special points remain for consideration. I have so far treated disease as if it were a condition which only affects individuals and have said nothing of those cases of disease in which a whole population or a large portion of it suffers simultaneously from disease. I have now to consider what is the attitude of the peoples we are considering towards epidemic disease.

Here, as in individual cases of disease, we find medicine intimately blended with magic or religion. Among those peoples whose lives are dominated by magic epidemics are ascribed to the action of sorcerers, but it is supposed that they are produced by the sorcery of members of some other village or some other island. I have recorded[8] a case from the Banks Islands in which a man who wished to injure a woman who had refused to marry him held a bamboo containing certain ingredients so that the wind should carry its influence to the island where the woman was living. An epidemic illness which shortly followed was ascribed to his action. Payment was made to the sorcerer who sent young coconuts to which he had imparted power (*mana*), and the milk of these coconuts was poured at the door of every sufferer so that the epidemic might be stayed.

For an example of epidemic disease ascribed to the agency of higher powers I may return to Eddystone Island. Here such disease is supposed to be due to the action of a being or beings called Ave, whose coming is indicated by the presence of broken rainbows, shooting stars, red clouds, and showers of fine rain while the sun is shining. The symptoms of the disease usually produced by Ave are fever, headache, and cough, while an epidemic, probably due to a special Ave from the island of Ysabel, takes the form of dysentery. It is probable that Ave was originally the name of the spirits or ghosts associated with certain shrines in Eddystone now neglected, and that when an epidemic of dysentery reached the island it was ascribed to an Ave from Ysabel, which is pictured as a red being which flies in the air with its mouth full of blood.

When an epidemic ascribed to Ave visits the island the people appeal to one who knows the appropriate rites. This man with certain companions visits a now disused village. After uttering the names of certain ghosts, probably those of his predecessors in the knowledge of the rite, he proceeds: "You, at the root of the sky, come down and depart. There is an end of the men, there is an end of the chiefs; an end of the chief's wives; an end of the chief's children. Come and depart thou, &c.,"

[7] In Neuhauss, Deutsch Neu-Guinea, iii., 516.
[8] The History of Melanesian Society, i., 158.

the prayer ending with an exclamation like a bark, when all present shout. Then the root of turmeric is distributed and all chew it and spit it about the path as they go towards the shore, making as much noise as possible with the idea of driving away the Ave. When they reach the shore the leader in the ceremony folds a large leaf so as to make it like a canoe. In this imitation vessel he puts ashes, some of the leaf used in thatching a house and five small shell ornaments called *ovala*. He then utters the following words: "You! Go to Ysabel; go to Choiseul.[9] Do not stay in Mandegusu." The canoe is then taken out to sea and put on the waves so that it goes away from the island. It is believed to carry Ave back to the place whence it came.

RELATIONS OF ECONOMICAL AND JURIDICAL NATURE.

The chief object of these lectures has been to show the intimate relation of medicine with magic and religion among certain peoples who rank low in the scale of general culture. It may have been noticed that this tie carries with it other relations of an economical and juridical kind. Thus, the *kenjo* of Eddystone Island is not merely an example of an intimate blend between medicine and religion, but at the same time it involves the institution of private property. The people of Eddystone Island form a good example of communism in goods, large groups of persons owning land and certain other property in common. The process called *kenjo* which we have so far studied in its relation to the social categories of medicine and religion is also a means by which certain kinds of property—namely, the fruit of certain trees—are kept for the special use of individual persons. It is a social practice by which a communistic people have progressed some way along the path of individualism.

The *kaia* rites of the Gazelle Peninsula and Duke of York Island which I described in my first lecture afford another example of a similar process. The half snake, half human being called *kaia* is believed to abstract the soul of any person who takes fruit from the trees of the district it inhabits, persons from other districts being especially prone to suffer from its action. It is probable that the belief in the efficacy of this being is definitely fostered by the inhabitants of a district as the means of protecting their property from the people of neighbouring districts. It would be very wrong to regard the institutions of the Solomon Islands and New Britain as inventions of the people in the interests of private property. The belief in the production of disease as a punishment for theft, however, provides a motive which tends to perpetuate the ideas and practices which bring medicine into so intimate a relation with religion. We have here only one of countless examples showing that among peoples of rude culture the distinction of social categories from one another is far more difficult than among ourselves. The religious character of the medical art among such peoples is only one example of the way in which religion and the religious attitude permeate every part of their social life. Religion among such people is not a matter for one day in the week, but influences every act of their daily lives.

THE PART PLAYED BY SUGGESTION.

Another subject well illustrated by the proceedings described in these lectures is the evidence concerning the part played by suggestion in the production and cure of disease among such people as the Papuans and Melanesians. There can be no question that such processes as I have recorded in these lectures are efficacious. Men who have offended one whom they believe to have magical powers sicken, and even die, as the direct result of their belief, and if the process has not gone too far they will recover if they can be convinced that the spell has been removed. Similarly, one who has intruded on the haunt of a ghost or spirit will suffer, it may be fatal illness, because he believes that he has lost his soul, and he will recover after the performance of rites to which he ascribes the power of restoring the lost soul to his body. Doubtless, with this real factor of suggestion there is mixed up much deception, especially on the part of those to whose special knowledge the production and cure of disease is ascribed. If one falls ill with symptoms which by popular belief are ascribed to a sorcerer or to some spirit whose influence is believed to be under the power of a priest, the sorcerer or priest is only too ready to accept the rôle ascribed to him, to earn money and at the same time enhance his reputation for medico-magical or medico-religious powers.

At the same time there is reason to believe that he is not wholly a deceiver, but in some measure shares the general belief in his own powers. Even that degree of intimacy with those who practise medico-magical and medico-religious arts which is possible to such a visitor as I have been among several peoples is enough to show the sincerity and earnestness of many of these practitioners. I believe that in many cases it is the same among ourselves, and that a study of our own quacks and charlatans with that amount of care which we devote to the Australian or the Melanesian leech would show us the impostor far less than is usually supposed. Imposition there is, no doubt, but if such a study were carried out from the psychological point of view it would often reveal the enthusiast and the crank in even greater measure than the impostor.

Not only will the study of peoples of rude culture help us to estimate aright the part taken by fraud and deception in certain forms of the medical art of the civilised world, but, what is far more important, it will help us also to understand better the place taken by suggestion both in the production and the treatment of disease. From the psychological point of view the difference between the rude arts I have described in these lectures and much of our own medicine is not one of kind, but only of degree.

RATIONALITY OF THE LEECHCRAFT.

The chief lesson, however, impressed upon us by the facts brought forward in these lectures is one the importance of which reaches far beyond the limits of our special subject. This lesson is the rationality of the leechcraft of such peoples as the Papuan and the Melanesian. The practices of these peoples in relation to disease are not a medley of disconnected and meaningless customs, but are inspired by definite ideas concerning the causation of disease. Their modes of treatment follow directly from their ideas concerning etiology and pathology. From our modern standpoint we are able to see that these ideas are wrong. But the important point is that, however wrong may be the beliefs of the Papuan and Melanesian concerning the causation of disease, their practices are the logical consequence of those beliefs.

We may say even that these peoples practise an art of medicine which is in some respects more

[9] Neighbouring islands.

rational than our own in that its modes of diagnosis and treatment follow more directly from their ideas concerning the causation of disease. According to the opinion of the civilised world these ideas of causation are wrong, or contain but grains of truth here and there, but once grant these ideas and the body of medical practice follows therefrom with a logical consistency which it may take us long to emulate in our pursuit of a medicine founded upon the sciences of physiology and psychology.

I tried to show in my first lecture that the concepts underlying the magical procedure of savage man have not the vague and indefinite character often assigned to them, but form clear and relatively concrete motives for the complex procedures of the sorcerer and leech. These concepts form the starting-point of his logical processes, and the general conclusion which can, I believe, be drawn from the facts before us is that these logical processes are as definite as the premises from which they start.

There can be no greater hindrance to progress in our attempts to understand the mind of the man of lowly culture than the belief so widely held that his actions are determined by motives having that vague and lawless character ascribed by many to the thought of savage man. There are even those who hold that such peoples as the Papuan and Melanesian have not yet reached the logical stage of thought.[10] I believe there is no single department of social life in which it cannot be shown that this view is false. I have elsewhere attempted a demonstration of its falsity in one department of social life.[11] I hope the facts brought forward in these lectures are sufficient to show that in the department of his activity by which he endeavours to cope with disease, savage man is no illogical or prelogical creature, but that his actions are guided by reasoning as definite as that which we can claim for our own medical practices.

It must be noted, however, that the examples of leech-craft which have been recorded in these lectures have not always formed part of a strictly logical and consistent system. The way in which the causation of disease by such agencies as Mateana and Sea, as well as by the evil eye and sorcery, has become subservient to the ancestor-cult which underlies the *kenjo*, is an instance from Eddystone Island. The indefiniteness of the beliefs connected with the being called Ave gives another instance from the same island. As an example from New Guinea may be mentioned the employment by the Kai of several remedies, such as bleeding and massage, which do not, so far as we know, immediately follow from their ideas concerning the causation of disease. Such cases lead us to a set of problems which I have left on one side in these lectures, problems which would lead us to a mode of studying early medicine too large to be included in the scope of this course of lectures—namely, the study of the transformations suffered by medical beliefs and practices as the result of the contact and blending of peoples. These lectures have dealt with two only of the methods by which social facts may be studied—the sociological and the psychological. I must leave the far more difficult problem of the historical relations of medicine, magic, and religion for another occasion.

[10] Lévy-Bruhl: Les Fonctions Mentales dans les Sociétés Inférieures, Paris, 1910.
[11] The Primitive Conception of Death, Hibbert Journal, 1912, x., 393.

FACTORS RESPONSIBLE FOR GASEOUS GANGRENE.

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THE following notes on some experimental work with the B. aerogenes capsulatus of Welch are published in the hope that they may be of value in the treatment of gaseous gangrene as it occurs among the wounded. No attempt has been made to include a review of the literature on the subjects discussed, it being found impossible to obtain much information upon the work now being conducted in the various military hospitals. The notes cover work upon the products of the bacillus which are responsible for the pathological changes observed in the clinical infections and in the experimental laboratory animals.

The factors whose importance is discussed in this paper are: (1) The endo-toxin contained in the bacillus; (2) the exo-toxin elaborated by the bacillus; (3) the toxin elaborated from the tissue undergoing, or which has undergone, degenerative changes due to the action of the bacillus, which substance, for lack of a better term, has been designated "tissue toxin"; and (4) the gas produced by the growing bacilli.

Endo-toxin.

In order to obtain some information, if possible, upon the importance of the endo-toxin contained within the bacillus, the following experiments were made.

A broth culture of a highly virulent strain of the bacillus, 48 hours old, was passed through a Kitasato filter, the bacteria washed with normal salt solution, sterilised at 56° C. for 30 minutes and injected into animals. Two young rabbits, weighing about 600 grm. each, were injected by the ear vein, one with four thousand million of the washed bacilli, the other with six thousand million. Neither animal showed any discernible effect. A guinea-pig, weighing 150 grm., was injected subcutaneously with about eight thousand million of the same washed bacilli. No harmful result could be observed.

While the breaking down of the bacilli and the freeing of the endo-toxin must necessarily have been rather gradual, it is probable that some effects would have been observed from a dosage of this size if an endo-toxin of appreciable activity were contained in the bacillus.

Exo-toxin.

For the experiments to determine the activity of the exo-toxin, filtrates from sugar-free 48-hours broth cultures of three different strains of the B. aerogenes capsulatus were used. Guinea-pigs alone were employed for these experiments, and the injections of the exo-toxin made subcutaneously or intraperitoneally. For a pig of about 250 grm. the lethal dose was found, in the case of each strain, to be in the neighbourhood of 10 c.c. of this filtrate. Six animals receiving lethal doses died within 24 hours. Smaller doses, of from 4 to 8 c.c., produced symptoms of intoxication, such as loss of power in the hind legs, rapid respiration, and refusal to eat. All the animals dying from the injections were examined post mortem. The characteristic picture was similar to that seen in the case of the actual infection. There was a serous or blood-stained subcutaneous or peritoneal exudate with considerable softening, in the subcutaneous injections, of the subcutaneous muscle. The liver

showed considerable degeneration of the parenchyma, the spleen marked congestion, and the lungs a condition of œdema with hæmorrhage into the alveoli. Cultures taken of the subcutaneous tissues, peritoneal exudate, and heart's blood were sterile in every case.

An attempt was made to reproduce *in vitro*, by means of the exo-toxin, the same pathological changes which are seen in the specimens of muscles and liver from clinical cases or experimental infections in animals. With this in view the following experiment was undertaken:—

Fresh muscle and liver obtained from necropsy were handled aseptically and cut in small sections about half a centimetre in diameter. These were incubated for varying lengths of time, on the one hand in the exo-toxin obtained in the usual manner, and on the other hand, for a control, in broth of the same character as that used for the production of the exo-toxin. Pieces of the muscle and of the liver were removed from the solution at intervals. After 24 hours' exposure to the action of the exo-toxin, both the specimens of liver and of muscle showed on microscopical examination a much greater degree of degeneration (characterised by granular disintegration and solution of the cytoplasm of the parenchyma) than the specimen in the simple broth. After 40 hours a still more marked difference was evident between the specimen treated with exo-toxin and that treated with ordinary broth. It appeared to be evident that a definite proteolytic substance was present in the exo-toxin.

This process of digestion resulted in the formation in the filtrate neither of a substance which would reduce cupric hydroxide nor of gas. It was also found that the exo-toxin (as well as the dead bacteria) was unable to split glycogen or the polysaccharides in solution into monosaccharides or to form gas from either. As is perhaps to be expected, the production of gas appears to be a function of the growing organism.

It has been concluded from these tests that the exo-toxin is of a fairly definite standard, although large doses are required to produce symptoms of intoxication. It is believed, however, that it must be considered an important part of the infection.

Tissue-Toxin.

It was considered, after observing the action of the exo-toxin upon the living animal, that this activity was insufficient to explain the extreme degree of intoxication seen in clinical cases in which there was extensive gaseous gangrene. The rapid course of the terminal phase of fatal cases of this infection is not due to an invasion of the blood by the bacilli, since it is extremely rare to find it in the blood before death. The picture is rather that of fatal burns, where there is absorption from large amounts of dead tissue undergoing autolytic disintegration. It seems probable that the toxæmia is due, at least in part, to the absorption of the autolytic products of protein digestion from the enormous amount of tissue which has been killed by the combined action of the exo-toxin and the gas. This theoretical factor is referred to as "tissue-toxin," and is perhaps a much more active factor in the intoxication than the toxin formed by the bacilli.

The Importance of the Gas.

In addition to the study of the toxins formed by the B. aerogenes capsulatus, an investigation of the rôle played by the gas produced by the bacillus in the tissues has been conducted. Two points have been considered: (1) the toxicity of the gas; and (2) its mechanical action.

Toxicity.—Experiments were made with a view to determining the toxicity of the gas formed by different strains of the bacillus when grown in muscle media containing dextrose. For this purpose a simple apparatus in the nature of a modified large fermentation tube was devised, the blind end of which was drawn out into a capillary tip and sealed. This tube was filled with the media and inoculated. After 48 hours the gas collected in the blind end of the tube was treated with lime water to remove the inert carbon dioxide which constituted from 30 to 40 per cent. of the volume of the gas, and the remainder injected subcutaneously by the following procedure.

A piece of short rubber tubing with a small hypodermic needle was attached to the blind end of the tube and the joint sealed; the open end of the fermentation tube was connected by another piece of tubing with a graduated burette containing water. The hypodermic needle was then inserted under the skin of a guinea-pig, the stop-cock of the burette opened, and the gas put under whatever pressure was found necessary by elevating the burette; then, by breaking the capillary tip within the rubber connexion of the needle the gas was allowed to flow slowly into the subcutaneous tissues. The amount of gas injected was measured by the fall of the column of water in the burette.

In the first experiment 6 c.c. of the gas from which the carbon dioxide had not first been absorbed were injected subcutaneously into a small guinea-pig weighing about 150 grm. In the second experiment the carbon dioxide was first removed and 15 c.c. of the remaining gas then injected in a similar manner into a pig of about the same size. This experiment was repeated in an identical manner with about 12 c.c. of the gas, minus the carbon dioxide, produced by another strain of the bacillus. In no case did the guinea-pig show any ill-effects whatever, although for half an hour or more the skin remained ballooned out before the gas was entirely absorbed.

In connexion with these tests it has been possible, through the unexpected discovery of the bacillus in the hæmorrhagic pleural exudate of a soldier wounded in the chest by a piece of shell, to make the next experiments, which have some bearing on the toxicity of the gas.

The injection of 1½ c.c. of this fluid into the peritoneal cavity of a guinea-pig caused the death of the animal within 24 hours; the B. aerogenes capsulatus was recovered in pure culture from the heart's blood.

Two patients, A and B, both wounded in the chest, were found to have a large amount of bloody pleural exudate. The constitution of the fluid was, as far as we could determine, practically identical in both cases, except that one (A, who is referred to above) was infected with a pure strain of the B. aerogenes capsulatus, while the other (B) was sterile. On incubating in a sterile tube the infected fluid only one or two very small bubbles of gas were formed. On the addition to separate tubes of this fluid of a small quantity of (1) dextrose, (2) glycogen, (3) a small fragment of fresh liver, or (4) a piece of fresh muscle, a large percentage of gas was produced within 24 hours. In order to determine the gas-producing power of the fluid before it had been acted upon by the bacillus we added to other tubes containing the sterile exudate from the parallel case (B) a few drops of the infected exudate from Case A. In these tubes about 1/10th of a c.c. of gas was formed per c.c of fluid. A similar amount of gas was formed in this fluid (B) when inoculated with another pure strain of the perfringens. The small amount of gas formed in this media, compared with that formed in the ordinary media, seems to indicate that blood is very poor in the constituents necessary for the production of gas by this bacillus. As the fluids from the two chests were, we believe, practically identical, we feel that we can conclude that a minimum of 300 c.c. of gas was produced in the pleural cavity and absorbed by the first patient (A) with the infected exudate, as over 3000 c.c. were removed from the chest by aspirations. As the case seems more or less parallel with the experiments on guinea-pigs, and as the patient showed small evidence of intoxication and no discomfort other than was to be expected from the pressure of so much fluid in the pleural cavity, it may be considered further evidence that the gas is not actively toxic.

It has been concluded from these tests that the gas produced by this bacillus in the muscle media or in media containing large amounts of blood is of little or no importance as a toxic factor.

Mechanical action.—An attempt has also been made to demonstrate the mechanical action of the gas produced by the bacillus in the tissues, and the experiments described below were conducted with that end in view.

1. Four guinea-pigs of equal size were inoculated in the muscle of the thigh with one drop of a 24 hours' broth culture of the gas bacillus. The animals were killed at intervals of one, two, three, and four hours after inoculation, the inoculated legs hardened *in toto*, cut transversely, and examined. No macroscopical or microscopical change could be determined in the specimen from the animal killed one hour after inoculation. In the specimen from the animal killed two hours after inoculation definite distension of the muscle sheaths of the inoculated thigh was evident on dissection. On microscopical examination of the hardened specimen an extensive diffuse affection of the muscle tissues of almost the entire thigh could be readily demonstrated. The individual muscle fibres showed the characteristic separation and beginning fragmentation, evidently the result of diffusion of gas under pressure. The bacteria still remained at the site of inoculation, while the muscular degeneration extended throughout almost the entire thigh. Examination of the uninoculated thigh of the same animal showed no such changes and it appeared normal. The specimens from the animals killed three hours and four hours after inoculation showed more extensive changes of a similar character. The bacteria still seemed to be fairly well localised at the spot where they were injected.

2. In order to determine the amount of pressure which might be generated in a short time by the activity of the bacillus, the indicator of an autoclave was attached by a piece of heavy rubber tubing to a glass tube containing 10 c.c. of dextrose broth inoculated with one drop of a broth culture of the bacillus, and the apparatus incubated. Pressure began to rise about two hours after inoculation, and after five hours had reached 1½ atmospheres (23 pounds) of pressure when the rubber connexion blew off the indicator.

It is evident from these tests that the actively growing bacilli are capable of producing a pressure which must be extremely destructive to living tissue, and, further, that this pressure must be generated within a very short period of time if the process is, as frequently occurs, restrained by a firm muscle sheath. This pressure must, of course, produce a complete anæmia of the muscle within which the pressure is generated and maintain this anæmia until the rupture of the muscle sheath occurs. In addition to bringing about the death of the tissue by anæmia, it is apparent from microscopical examination of muscles which have been subjected to these high pressures that there is an actual fragmentation of the individual fibres with rupture of the fibre sheaths and disintegration of the fibre substance.

Since the infection by the B. aerogenes capsulatus is essentially a muscle infection, and since, further, the invasion of the subcutaneous tissues by the bacilli is unusual, it is probable that the symptom of subcutaneous crepitation appears generally when a sufficient intramuscular pressure has been reached to rupture the muscle sheaths and allow the escape of the gas into the loose tissue beneath the skin. It is not necessarily an index of the extent of the infection. There are, of course, cases in which there is already sufficient communication between the deep-seated muscle infection and the subcutaneous tissue to allow the escape of the gas without producing any extreme pressure. It is, perhaps, when such passages become occluded that the explosive type of the infection is manifested.

It seems probable that a further action of the gas, which may occur especially at the time of release of pressure due to a rupture of the restraining tissue, may be that of a scattering of the bacteria, which may be carried along the track of the escaping gas.

The recognition of the extreme pressures which may be rapidly generated within the muscles by the activity of the bacillus creates a new surgical problem—that of the effective drainage of gas instead of a purulent material. The mechanical closing of surgical incisions by the outward bulging of the muscle into the wound makes this especially difficult. Incisions parallel to the muscle fibres are often inadequate. The ideal drainage—a transverse incision through the deep muscle tissues—is impracticable on account of its permanent disabling effect. It is probable, however, that the rapid recovery after amputation of so many severe cases of gaseous infection which have involved most of the muscular tissues of the thigh and frequently extended on to the trunk is the result of the transverse section of all the muscle bundles and the consequent release of intramuscular pressure.

It has been concluded from these experiments and from the study of the pathology of the clinical cases that the following facts may be stated.

1. The gas produced by the B. aerogenes capsulatus is of little or no importance as a toxic factor.

2. The mechanical action of the pressure produced is usually, if not always, the most important part of the infection. To it may be charged the development of highly pathogenic possibilities in a usually rather innocent infection. It brings about (*a*) the death of the tissues from the resulting anæmia produced by a pressure much higher than that of the circulating blood; (*b*) the actual mechanical fragmentation of the tissues, especially muscle; and (*c*) the mechanical scattering of the infection.

3. One of the chief problems in the treatment of the infection is that of establishing drainage for the escape of the gas before the pressure ha resulted in the death of the tissue.

In connexion with this paper it is my pleasure to acknowledge the laboratory's financial assistance from Mr. Robert Walton Goelet, which has made the work possible, the interest and valuable criticism of Dr. Joseph A. Blake, and the active coöperation of Dr. Bertram H. Buxton, and of my assistants, Miss Mary Davies and Miss Nathalie Bach.

TWO CASES OF HEART-BLOCK.

BY CHRISTEN LUNDSGAARD, M.D.

(*From the Municipal Hospital of Copenhagen, Denmark.*)

I.—*A Case of Paroxysmal Auricular Fibrillation and of Paroxysmal Intermittent Heart-block.*

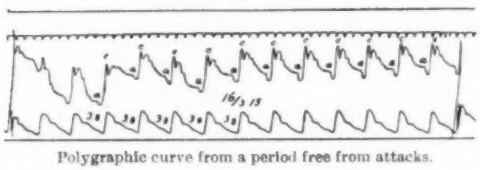
Summary.—In a patient, a man aged 59 years, suffering from aneurysm of the aorta a transitory attack of irregular pulse was observed, appearing at one time to be an intermittent heart-block, at another time an arrhythmia perpetua.

The patient, a man aged 59, was admitted to the hospital on Feb. 2nd, 1915, with the diagnosis of myocarditis. He had enjoyed good health during his childhood and younger days. No rheumatic fever. Thirty-four years ago he was infected with lues and was treated at the hospital with mercury (20 applications). No later attacks or treatment. He is only a moderate smoker, but fond of chewing tobacco. In former days he was much addicted to

drink, although in moderate quantities; now he had become a teetotaler. His present illness began seven years ago, occurring in paroxysms which he described as follows. While in perfect health he sometimes—frequently during the day, seldom at night—got a most peculiar piercing pain behind the lower part of the sternum, corresponding to the insertion of the fifth and sixth costal cartilages. From here the pain often extended later to both sides, especially in the fifth interspace, reaching as far as to the nipple line or even into the first and second finger of the right hand. As a rule the attacks were of some hours' duration, being never accompanied by fainting or convulsions. During the first attack his feeling of distress and anxiety was so great that he thought he was going to die. In subsequent attacks he had felt no anxiety. No acceleration of the heart beat or shortness of breath during the fits; he was able to walk about without discomfort, even to ascend stairs without getting short of breath. After the attacks he generally felt tired and exhausted. About a year elapsed between the first attacks; later they occurred from five to six times a month.

A physical examination was made on Feb. 18th. The patient was a man of powerful build and healthy appearance. Excellent state of nutrition. Lungs normal. Heart: Right side, limit normal. On the left side the relative dullness reached one fingerbreadth outside the nipple line in the sixth interspace. No dullness behind manubrium sterni. Apex beat not palpable. No præcordial bulging or thrill. No murmur; no accentuation was heard. Pulse-rate 72, regular. (Fig. 1.) Blood pressure 80 mm. Hg (Gärtner's tonometer). The pulse of both radial arteries synchronal. Abdomen normal. No œdema. Urine normal: quantity ca. 1000 c.c. Temperature not raised. Luetin test positive; Wassermann test negative. (21/II and 5/V.) Roentgen examination showed (Feb. 21st) the shadow of the heart enlarged on the left side. In addition to this a beginning aneurysmal formation of aortic arch. Clinical diagnosis: Lues antea; aneurysma aortæ; myocarditis incipiens.

FIG. 1.

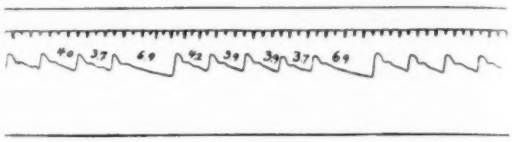


Polygraphic curve from a period free from attacks.

On Feb. 23rd, at 7 A.M., the patient, while feeling quite well, got one of his usual attacks. Pulse rather soft, completely irregular with no distinct rhythm, frequency ranging between 60 and 80. On auscultation a completely irregular heart action (delirium cordis) was heard, corresponding to the pulse. No change of heart dullness was noticed. At the base of the lungs behind a fine crepitation was heard. Colour somewhat pale, expression anxious, but not cyanotic. No dilatation of the veins of the neck; no enlargement or sensitiveness of the liver; no œdema. A polygraphic curve shows an arrhythmia perpetua. On the curve numerous fine waves are visible, probably due to the quick movements of the auricle. (Fig. 2.) Two grm. of digalen were given subcutaneously with no marked effect. Later in the afternoon the pulse was regular again (76), and the pain, the discomfort in the heart region, and the crepitation of the lungs had disappeared. He now felt quite well for five weeks until on April 3rd, without any external cause, an attack occurred again at the same time, 7 A.M., but less disagreeable than the previous attack. Pulse-rate about 60 and a sort of fundamental rhythm was distinctly heard, interrupted by intermissions, during which no heart action was noticeable. Curves (Figs. 3A and 3B) illustrate this—an intermittent heart-block. At 4 P.M. pulse and heart action were again quite normal and he felt fairly well.

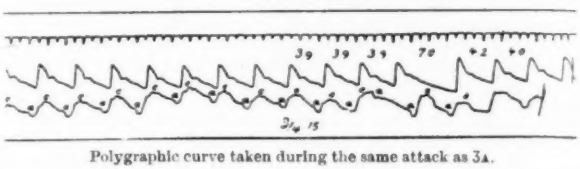
At the beginning of his residence at the hospital he was treated with pot. iod.; later (from March 3rd) he was given mercury (50 applications). A few times he received tinct. dig. aetherea gtt. 15 and digalen gtt. 15. Occasionally he was given morphine and veronal on account of sleeplessness. After discharge attacks occurred at intervals, as a rule twice a month, and, according to patient's statement, similar to those occurring during his stay at hospital. This statement was, however, not verified.

FIG. 3A.



Radial curve taken during an attack of intermittent pulse.

FIG. 3B.



Polygraphic curve taken during the same attack as 3A.

I have only found one similar recorded case (Wilkinson and Butterfield).

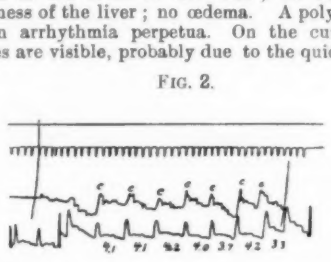
II.—*A Case of Acute Heart-block in a Patient Suffering from Rheumatic Fever.*

Summary.—In a patient, a man aged 33 years, suffering from rheumatic fever, an intermittent heart-block was observed, which disappeared the same day as the joint symptoms ceased, and the temperature fell to normal.

The patient, a man aged 33, was admitted to the hospital on Dec. 21st, 1914, with the diagnosis of rheumatic fever, (?) endocarditis. He had had scarlet fever and measles as a child. During a stay in the United States of America, at the age of 23 years, he had an attack of malaria. Since then he had been healthy. Lues and abuse of spirits denied. Three weeks before admission he caught a mild rheumatic fever. For a week he remained up with fever and joint pains. The last week he had been confined to bed. Temperature about 40° C. For the last ten days palpitations in the heart region.

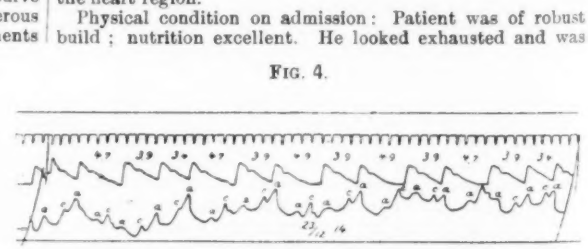
Physical condition on admission: Patient was of robust build; nutrition excellent. He looked exhausted and was sweating. There was considerable pain and slight swelling of the joints of the hand, elbow, shoulder, left jaw, left knee, and also of some of the smaller joints. Lungs normal. Heart: Area of dullness normal, heart tones low and distant without murmur; no accentuation. Pulse-rate 72, irregular; periods of 2–5 beats were succeeded by a pause, after which again a couple of beats, and so on. Heart action corresponds to the pulse. The intervals of pulsation evidently were not compensatory, but of shorter duration. No cyanosis.

FIG. 2.



Polygraphic curve showing auricular fibrillation.

FIG. 4.



Polygraphic curve showing intermittent heart-block.

no dyspnœa. No signs of stasis. Urine, a trace of albumin; quantity ca. 1000 c.c. Temperature 39·3° C. The polygraphic curve (on Dec. 23rd) shows an intermittent heart-block. (Fig. 4.)

After a week's treatment with confinement to bed and salicyl his joint symptoms disappeared, temperature became normal, and he felt fairly well. After another fortnight (six weeks in all) he was discharged in excellent health.

The irregularity of the pulse and of the heart action kept constant for the first week of residence, but then suddenly disappeared, along with the joint symptoms and the fever. During the remainder of his stay the pulse was quite normal, rate about 76. Palpitation also ceased with the arrhythmia.

In the literature numerous cases of acute heart-block have been reported, occurring during the course of infectious diseases. It has been observed with influenza (Mackenzie), with pneumonia, especially in the stage of convalescence (Magnus-Alsleben, Porter), and with diphtheria (Böe, Fleming and Kennedy, Price and Ivy Mackenzie). Cases occurring during the course of rheumatic fever are described by Gerhardt, Cowan and Patterson, Magnus-Alsleben, and P. F. Holst. Complicated with ulcerative endocarditis it was observed by James and by Cowan, Fleming, and Kennedy, with gonorrhœal sepsis by Jellinck and Cooper and by John Hay. During the convalescence from an abscess it was noticed by Holst. Butterfield has reported a case during the course of an acute myocarditis. In most of these cases of heart-block occurring coincident with infectious diseases the intermittent type is predominant, a total heart-block or 2 : 1 rhythm being only observed a few times. In cases where necropsy was performed the auriculo-ventricular bundle nearly always was the seat of inflammation and degeneration. In the case described by Price and Mackenzie the auriculo-ventricular bundle, however, presented no anatomical changes.

There is reason to believe that the acute heart-block in infectious diseases is due to direct infectious or toxic lesions of the auriculo-ventricular bundle. In rheumatic fever such a localised myocarditis may be associated with endocarditis. Magnus-Alsleben has described a case of rheumatic fever with intermittent heart-block in which the disturbance of the auriculo-ventricular bundle, as in our case, disappeared as soon as the joint symptoms ceased. Shortly afterwards the pulse grew irregular again, and two days later a relapse of the joint symptoms occurred.

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DEATH OF A PLAGUE RESEARCH WORKER.—Mr. W. A. Borger, assistant director of the Pasteur Institute at Weltevreden (Java), has died at the age of 42, after an illness of four days due to pneumonic plague contracted in his laboratory. For two years Dr. Borger had devoted much time to researches on the preparation of a prophylactic vaccine against plague. Five days before his illness he had been working with broth cultures of a very virulent strain of the bacillus. He was a most careful worker and habitually took elaborate precautions against infection, with the exception of not wearing a mask while working. Dr. Borger was held in high esteem in Java as well for his scientific accomplishments as for his personal qualities. On his visit to England in 1912 he met other workers in his own line of research who will regret his early and tragic decease.

THE BACTERICIDAL ACTION OF NORMAL AND INFECTED SERA UPON DIFFERENT MICROBES.

BY K. SAKAGAMI.

(*Under the Direction of* Sir ALMROTH E. WRIGHT, *from Inoculation Department, St. Mary's Hospital, London, W.*)

IT was already known to our scientific predecessors what microbes would grow in normal serum and what ones would fail to do so, but still they could not get any definite results. Sir Almroth Wright experimented with them and made several important discoveries. I have begun to work at this problem and my idea is as follows. Microbes do not as a rule grow in normal serum; if they grow the serum has no bactericidal power, and we must use another power of the serum to kill them. We must investigate a way of contriving to make such serum bactericidal by adding to it some further power. Before I explain my experiment I will state some processes of reasoning.

Wright and Windsor (1902) reported with regard to the bactericidal action exerted by human blood upon the various microbes and classified these bacteria, and it was established in research as follows: (*a*) Normal human blood does not exert upon the staphylococcus any bactericidal action; (*b*) antistaphylococcus inoculation does not lead to a development of any bactericidal power in the blood.

Wright (1904) treated acne with staphylococcus vaccine and reported as follows: First, a negative phase of diminished bactericidal power corresponding, no doubt, to the period of initial application of the bacterial stimulus; secondly, a positive phase of greatly increased response; and lastly, as the original stimulus passes off, a comparatively durable period of increased resistance.

Wright and Leishman (1908–9) reported that normal human blood has no bactericidal power upon the staphylococcus and distinguished between bactericidal power and phagocytic power.

Meaking (1909) reported that normal serum has no bactericidal power upon staphylococcus and streptococcus and (1910) demonstrated by the method of dilution the existence of bactericidal action upon B. dysenteriæ, B. tuberculosis, streptococcus, and in a less degree upon staphylococcus.

Wright (1913) reported that normal serum of white people and tropical natives does not exert bactericidal power upon the pneumococcus.

I have arranged and classified the foregoing conflicting opinions as follows: 1. That normal serum and immune serum have no bactericidal power upon the staphylococcus and streptococcus. 2. That they have some small bactericidal power. 3. That they have marked phagocytic power.

I will now describe the results of my own experiments with a view to test generally on what microbes normal serum and immune serum have bactericidal power.

Preparation of the Experiment; Principle of the Method.

Operation 1.—To make the emulsion, use the following bacteria: (1) Staphylococcus pyogenes aureus, (2) M. catarrhalis, (3) meningococcus, (4) pneumococcus, (5) streptococcus pyogenes, (6) B. typhosus, (7) B. coli communis, (8) B. choleræ, and (9) B. pseudo-tuberculosis. I made my emulsion of a 24-hours-old broth or agar culture of the bacteria.

Operation 2.—Preparation of dilution of the bacterial emulsion. Made according to the procedure described in

Sir A. Wright's Technique Book, Chap. 3 (Subsection 14b). Our diluting pipette was washed out and carefully sterilised, and as soon as it had cooled down I made a progressive series of multiple dilutions with broth as follows: 1/10, 1/100, 1/1000, 1/10,000, 1/100,000, and 1/1,000,000 (or sometimes 1/3,000,000, 1/5,000,000).

Operation 3.—Culture and time in the incubator to test. I mixed together equal volumes of serum and diluted emulsion of microbes, then put the mixture into an incubator for from 10 minutes up to as much as 24 hours; I then took it out and spread it out evenly on Petri dishes containing agar. These were then incubated for 24 hours and the number of colonies enumerated.

Experiment 1.

In this section is shown the bactericidal action of normal serum upon the several microbes.

TABLE 1A.—*Bacterial Emulsion of B. Coli Communis Mixed in Equal Volumes of Whole Serum, Diluted Serum, and Other Fluids.*

No.	Dilution of emulsion in broth, coli, 5 c.mm.	Kinds of fluids.	Time of test in minutes.	No. of colonies.
1	1/100,000	Control experiment.		327
2	,,	K. S.	40	207
3	,,	Tap water.	40	146
4	,,	Tap water + K. S.	40	192
5	,,	Normal NaCl.	40	159
6	,,	NaCl + K. S.	40	210
7	,,	Distilled water.	40	281
8	,,	Distilled water + K.S.	40	201

K. S. = Experimenter's own serum.

From this it appears that more B. coli communis are killed by tap water or normal NaCl than by serum or by diluted serum.

TABLE 1B.—*Method as Table 1a; time of test 60 minutes.*

No.	Dilution of emulsion in normal salt, 5 c.mm.	Kinds of fluids.	Time of test in minutes.	Results.	
				No. of colonies	Pos. or neg. on broth.
1	1/100,000	Control expm't.		177	+
2	,,	Distilled water.	60	43	+
3	,,	Sugar 10%.	60	45	+
4	,,	Normal NaCl.	60	45	+
5	,,	K.S.	60	81	+
	,,	K.S.+distilled	60	37	+
7	,,	K. S. + sugar.	60	60	+
8	,,	K. S. + NaCl.	60	39	+

From this it appears that serum has a smaller bactericidal power than the other fluids employed.

TABLE II.—*With Undiluted Normal Serum upon B. Coli Communis.*

No.	Dilution of emulsion in broth, coli, 5 c.mm.	Time of test in minutes.	No. of colonies in 4 series of tests.			
			K.S.	K. S.	F. M.	F. M.
1	1/100,000	Control.	346	160	160	178
2	,,	100	...	3	4	...
3	,,	90	...	...	...	...
4	,,	80	...	23	15	...
5	,,	70	...	...	...	...
6	,,	60	9	35	70	2
7	,,	50	36	...	...	6
8	,,	40	49	...	...	8
9	,,	30	52	...	...	14
10	,,	20	57	...	...	15
11	,,	10	58	...	...	20
12	,,	5	208	...	...	118

... Indicates that no experiment has taken place.

From this it appears that some bactericidal action appears in 10 minutes and much more in 100 minutes.

TABLE III.—*Comparison of Action of Fresh and Four-days-old Serum.*

No.	Dilution of emulsion, coli, 5 c.mm.	Time of test in hours and minutes.	No. of colonies			
			K. S. fresh.	4 days old.	F. M. fresh.	4 days old.
1	1/100,000	Control.	80	∞	80	∞
2	,,	3 30	...	...	1	...
3	,,	3 0	20	...	6	...
4	,,	2 30	20	...	40	...
5	,,	2 0	86	∞	56	∞
6	,,	1 40	...	∞	...	∞
7	,,	1 20	...	90	...	∞
8	,,	1 0	...	...	...	$\frac{\infty}{2}$

∞ = Countless colonies. $\frac{\infty}{2}$ = Fewer but still countless colonies.

These results show that with normal serum many microbes are killed in 2–3 hours, and that with four-days-old serum there is less bactericidal power. I think that, when the serum had bactericidal power, the action appeared in a few minutes but decreased again later, but when the serum had strong power it showed complete action after many hours.

TABLE IV.—*Normal Serum Heated to 60° C.*

No.	Dilution of emulsion, coli, 5 c.mm.	Time of test in hours and minutes.	No. of colonies.	
			K. S.	F. M.
1	1/100,000	Control.	$\frac{\infty}{2}$	$\frac{\infty}{2}$
2	,,	3 30	∞	∞
3	,,	3 0	∞	∞
4	,,	2 30	∞	∞
5	,,	2 0	∞	∞

From these results it appears that normal serum after heating has no bactericidal power, but rather that the microbes showed more growth.

TABLE V.—*Broth with Loop Pipette.*

No.	Dilution of emulsion, coli, 5 c.mm.	Time of test in minutes.	Normal serum.	Results.
1	1/100,000	Control.		+
2	1/100,000	60 and 80	K. S.	+
3	1/1,000,000	60 ,, 80	K. S.	+
4	1/5,000,000	60 ,, 80	K. S.	−

These results show that dilution 1/5,000,000 killed B. coli communis.

TABLE VI.—*With the Serum mixed with Equal Volume of Several Fluids against Staphylococcus.*

No.	Dilution of emulsion, staphylococcus, 5 c.mm.	Kind of fluids.	Time of test in minutes.	Results.	
				No. of colonies	Pos. or neg. on mannite.
1	1/100,000	Control.		197	+
2	,,	Distilled water.	60	86	+
3	,,	Sugar.	60	111	+
4	,,	Normal NaCl.	60	120	+
5	,,	K.S.	60	111	+
6	,,	K. S. + distilled water.	60	80	−
7	,,	K. S. + sugar.	60	95	+
8	,,	K. S. + NaCl.	60	114	+

This shows that dilutions with distilled water gave the greatest bactericidal results.

TABLE VII.—*With the Serum Mixed with Greater Volumes of Other Fluids.*

No.	Dilution of emulsion, staphylococcus, 5 c.mm.	Time of test in minutes.	Dilution of serum.	K. S. dilution in broth.	K. S. dilution in tap water.	K. S. dilution in distilled water.	K. S. dilution in NaCl.	K. S. dilution in sugar.
1	1/5,000,000	Control.		62	127	127	127	127
2	,,	At once.	1/10	184	134	111	243	78
3	,,	60	1/10	176	196	157	240	75
4	,,	60	1/20	121	84	140	94	73
5	,,	60	1/40	93	56	110	44	58

This shows greater bactericidal power the higher the dilution of the serum.

TABLE VIII.—*With Undiluted Normal Serum against Staphylococcus.*

No.	Dilution of emulsion, staphylococcus, 5 c.mm.	Time of test in minutes.	No. of colonies in 6 series of experiments.					
			K. S.	K. S.	Same on broth	K. S.	Stevens.	Kash.	Jones
1	1/100,000	Control.	70	204	+	658	320	365	212
2	,,	100	20	30	+	...	316	182	259
3	,,	60	18	80	+	617	209	300	201
4	,,	50	16	87	+	...	139	235	451
5	,,	40	44	107	+	...	163	263	456
6	,,	30	31	137	+	...	187	260	462
7	,,	20	24	170	+	...	191	242	264
8	,,	10	28	179	+	...	180	277	450
9	,,	At once.	...	...	...	814	...	...	...

This shows that only a few microbes are killed after 10 minutes, but many more after from 50 to 100 minutes.

TABLE IX.—*With Undiluted Normal Serum against M. catarrhalis.*

No.	Dilution of emulsion, M. catarrh., 5 c.mm.	Time of test in minutes.	No. of colonies.	
			K. S.	K. S.
1	1/100,000	Control.	347	201
2	,,	100	268	146
3	,,	60	128	83
4	,,	50	147	101
5	,,	40	78	65
6	,,	30	120	136
7	,,	20	158	93
8	,,	10	268	83

This shows that only few catarrhalis organisms are killed in from 10 to 100 minutes.

TABLE X.—*With Undiluted Normal Serum against B. typhosus.*

No.	Dilution of emulsion, typhosus six-hour culture, 5 c.mm.	Time of test in minutes.	K. S.	
			No. of colonies.	Pos. or neg. on mannite broth.
1	1/100,000	Control.	181	+
2	,,	100	32	+
3	,,	60	58	+
4	,,	50	68	+
5	,,	40	76	+
6	,,	30	83	+
7	,,	20	129	+
8	,,	10	309	+

This shows that after 10 minutes the number of microbes had increased, and that then it progressively decreased.

TABLE XI.—*With Undiluted Normal Serum against B. choleræ and B. typhosus. (Time of test = 4 hours.)*

No.	Dilution of emulsion, B. choleræ, 5 c.mm.	No serum added.	K. S.		Dilution of emulsion, B. typhosus 5 c.mm.	No serum added.	K. S.	
			No. of colonies.	Pos. or neg. on mannite.			No. of colonies.	Pos. or neg. on mannite.
1	1/300	Cont.	...	+	1/300	Cont.	...	+
2	1/1,000	216	10	–	1/1,000	...	60	+
3	1/3,000	37	3	–	1/3,000	177	55	+
4	1/10,000	27	1	–	1/10,000	154	33	+
5	1/30,000	16	0	–	1/30,000	102	29	+
6	1/100,000	3	0	–	1/100,000	31	1	–
7	1/300,000	2	0	–	1/300,000	8	0	–

This shows that B. choleræ is killed in 1/1,000 dilution while B. typhosus is only killed in 1/100,000.

TABLE XII.—*With Normal Serum against Streptococcus on Broth with Loop Pipette.*

No.	Dilution of emulsion, streptococcus, 5 c.mm.	Serum.	Time of test in minutes.	K. S.
1	1/10,000	K. S.	60	+
2	1/100,000	K. S.	60	+
3	1/1,000,000	K. S.	60	+
4	1/1,000,000	Control.		+

This shows that microbes are not killed in this way.

TABLE XIII.—*With Normal Serum against Pneumococcus on Broth with Loop Pipette.*

No.	Dilution of emulsion, pneumococcus, 5 c.mm	Serum.	Time of test in minutes.	K.S.
1	1/100	K. S.	60	+
2	1/1,000	K. S.	60	+
3	1/10,000	K. S.	60	+
4	1/100,000	K. S.	60	+
5	1/100,000	Control.		+

This result shows that pneumococci are not thus killed.

TABLE XIV.—*With Normal Serum against Meningococcus.*

No.	Dilution of emulsion, meningococcus, 5 c.mm.	Time of test in minutes.	K. S.
			No. of colonies.
1	1/100,000	Control.	13
2	,,	At once.	0
3	,,	60	0
4	,,	30	0
5	,,	10	0

This result shows that meningococci are killed.

TABLE XV.—*With Normal Serum against Pseudo-tuberculosis.*

No.	Dilution of emulsion, pseudo-tubercle bacillus, 5 c.mm.	Time of test in minutes.	K. S.
			No. of colonies.
1	1/100,000	Control.	788
2	,,	At once.	1095
3	,,	100	1616
4	,,	60	824
5	,,	50	571
6	,,	40	689
7	,,	30	622
8	,,	20	847
9	,,	10	685

This shows that a few microbes are killed after from 10 to 50 minutes.

Experiment 2.

In the following tables is shown the bactericidal action upon the several microbes of the serum of

infected patients as well as of the serum of a subject inoculated with mixed vaccine of cholera and typhoid.

(A) *With Serum of a Subject who had been Inoculated with Cholera and Typhoid Mixed Vaccine.*

TABLE XVI.—*Serum taken Seven Days after First Inoculation.*

No.	Dilution of emulsion, cholera, 5 c.mm.	Time of test in hours.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.	Dilution of emulsion, typhoid, 5 c.mm.	Time of test in hours.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.
1	1/10,000	Cont.	77	+	1/10,000	Cont.	55	+
2	,,	3	0	–	,,	3	0	–
3	1/100,000	3	0	–	1/100,000	3	0	–
4	1/1,000,000	3	0	–	/1,000,000	3	0	–
5	1/3,000,000	3	0	–	/3,000,000	3	0	–

In both these experiments the microbes had been killed.

TABLE XVII.—*Same Serum.*

No.	Dilution of emulsion, cholera, 5 c.mm.	Time of test in minutes.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.	Dilution of emulsion, typhosus, 5 c.mm.	Time of test in minutes.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.
1	1/100,000	Cont.	43	+	1/100,000	Cont.	47	+
2	,,	100	0	–	,,	100	0	–
3	,,	60	0	–	,,	60	0	–
4	,,	50	0	–	,,	50	0	–
5	,,	40	0	–	,,	40	0	–
6	,,	30	0	–	,,	30	0	–
7	,,	20	0	–	,,	20	0	–
8	,,	10	0	–	,,	10	0	–

These experiments showed that many microbes were killed.

TABLE XVIII.—*Similar Serum taken Nine Days After Inoculation and Heated to 60° C.*

No.	Dilution of emulsion, cholera, 5 c.mm.	Time of test in minutes.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.	Dilution of emulsion, typhosus, 5 c.mm.	Time of test in minutes.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.
1	1/100,000	Cont.	∞	+	1/100,000	Cont.	44	+
2	,,	100	∞	+	,,	100	37	+
3	,,	60	½ ∞ ½ 2	+	,,	60	23	+
4	,,	50	½ ∞ ½ 2	+	,,	50	32	+
5	,,	40	½ ∞ ½ 2	+	,,	40	34	+
6	,,	30	½ ∞ ½ 2	+	,,	30	34	+
7	,,	20	∞	+	,,	20	44	+
8	,,	10	∞	+	,,	10	42	+

Thus in the case of B. choleræ the bactericidal power has very largely decreased; the same occurs with B. typhosus, but not to so large a degree.

TABLE XIX.—*Same Serum taken Three Days after the Second Inoculation.*

No.	Dilution of emulsion, cholera, 5 c mm.	Time of test in minutes.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.	Dilution of emulsion, typhosus, 5 c.mm.	Time of test in minutes.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.
1	1/100,000	Cont.	112	+	1/100,000	Cont.	41	+
2	,,	100	0	–	,,	100	0	–
3	,,	60	0	–	,,	60	0	–
4	,,	50	0	–	,,	50	1	–
5	,,	40	0	–	,,	40	1	–
6	,,	30	1	–	,,	30	1	–
7	,,	20	2	–	,,	20	2	–
8	,,	10	2	–	,,	10	5	+

This experiment showed that this serum had less bactericidal power than that taken seven days after the first inoculation.

TABLE XX.—*Similar Serum Four Days after the Second Inoculation.*

No.	Dilution of emulsion, cholera, 5 c.mm.	Time of test in hours.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.	Dilution of emulsion, typhosus, 5 c.mm.	Time of test in hours.	K. S. No. of colonies.	K. S. Pos. or neg. on mannite.
1	1/300	Cont.	∞	+	1/300	Cont.	∞	+
2	1/300	24	∞	+	1/300	24	∞	+
3	1/1,000	24	∞	+	1/1,000	24	0	–
4	1/3,000	24	0	–	1/3,000	24	0	–
5	1/10,000	24	0	–	1/10,000	24	0	–

From this it appears that B. choleræ is killed in dilution 1/3000 and B. typhosus is killed in dilution 1/1000.

TABLE XXI.—*Same Serum taken Six Days after the Second Inoculation.*

No.	Dilution of emulsion, cholera, 5 c.mm.	K. S. 2 hrs. test. No. of colonies.	K. S. 2 hrs. test. Pos. or neg. on mann.	K. S. 3 hrs. test. No. of colonies.	K. S. 3 hrs. test. Pos. or neg. on mann.	Dilution of emulsion, typhosus, 5 c.mm.	K. S. 2 hrs. test. No. of colonies	K. S. 2 hrs. test. Pos. or neg. on mann.	K. S. 3 hrs. test. No. of colonies.	K. S. 3 hrs. test. Pos. or neg. on mann.
1	1/300 C.	∞	+	∞	+	1/300 C.	∞	+	∞	+
2	1/300	0	–	0	–	1/300	0	–	0	–
3	1/1,000	0	–	0	–	1/1,000	0	–	0	–
4	1/3,000	0	–	0	–	1/3,000	0	–	0	–
5	1/10,000	0	–	0	–	1/10,000	0	–	0	–

C. = Control experiment.

From this it appears that both B. choleræ and B. typhosus are killed in dilution 1/300-fold.

(B) *The Serum of Patients.*

TABLE XXII.—*With the Patients' Serum against Staphylococcus.*

No.	Dilution of emulsion, staph., 5 c.mm.	Time of test in minutes.	(John) Staph. and T.B., 1 month's inoc.	(Turner) Strept., no inoc.	(Heard) Strept., no inoc.	(Lovewell) Staph., 2 weeks' inoc.	(Hall) Staph. and T.B., 4 weeks' inoc.	(West) Staph. and T.B., 1 week's inoc.	(Jones) Staph., no inoc.	(Hall) Staph. and T.B., 4 weeks' inoc.	Normal serum (K.S.).
1	1/100,000	C.	356	253	439	199	439	199	331	360	199	360
2	,,	100	326	127	...	...	...	...	110	...	...	...
3	,,	60	369	178	140	154	387	154	165	233	154	118
4	,,	50	312	161	...	...	...	...	387	...	...	...
5	,,	40	362	206	409	...	379	...	306	...	...	...
6	,,	30	274	242	...	264	...	264	319	239	264	225
7	,,	20	273	304	373	...	406	...	294	...	...	...
8	,,	10	328	270	323	186	411	186	249	265	186	366

Staph. = Staphylococcus infection. Strept. = Streptococcus infection.
T.B. = Infection with Tubercle bacillus. Inoc. = Inoculation.
C. = Control.

This shows that the sera of patients with septic and mixed infections, from 10 to 100 minutes, have small bactericidal power.

TABLE XXIII.—*With Patients' Serum against Streptococcus on Broth Culture with Loop Pipette.*

No.	Dilution of emulsion, streptococcus, 5 c.mm.	Serum from patient infected with streptococcus, no inoc.	Time of test in minutes.	Positive or neg. on broth.
1	1/100	Turner.	60	+
2	1/1,000	Turner.	60	+
3	1/10,000	Turner.	60	+
4	1/100,000	Turner.	60	+
5	1/1,000,000	Turner.	60	+
6	1/1,000,000	...	Control.	+

This shows that the serum from such patients did not kill microbes.

TABLE XXIV.—*With Serum of Tuberculous Patients against Staphylococcus.*

No.	Dilution of emulsion, staph., 5 c.mm.	Time of test in mins.	(John) T. B. & staph., 1 month's inoc.	(West) T. B. & staph. 1 month's inoc.	(Thompson) 3 weeks' inoc.	(Thompson) 3 weeks' inoc.	(Thompson) 6 weeks' inoc.	(Thompson) 6 weeks' inoc.	(Ladner) 1 month's inoc.	(Ladner) 1 month's inoc.	(Ladner) 1 month's inoc.	(Hall) T. B. & staph., 4 weeks' inoc.	(Hall) T. B. & staph., 4 weeks' inoc.	(Easton) 1 year's inoc.	(Moore) No inoc.	(Moore) No inoc.	(Millington) No inoc.	(Werson) 3 weeks' inoc.	(Morgan) 2 years' inoc.	(Rowe) 1 year's inoc.	(Herbert) 1 year's inoc.	(Maror) 1 year's inoc.	(Thompson) 3 weeks' inoc., mixed K. S.	(Thompson) 3 weeks' inoc.
1	1/100,000	Control	356	331	360	841	199	199	437	356	69	353	437	88	700	782	168	439	164	164	354	202	390	356
2	,,	At once	...	...	...	467	187	176	...	...	...	...	...	...	...	554	...	277	...	167	247	96	...	...
3	,,	100	326	110	365	...	...	...	...	136	49	212	...	95	...	...	...	...	...	...	...	...	...	...
4	,,	60	269	165	356	570	238	125	174	392	62	288	387	110	321	694	121	309	119	159	348	43	194	116
5	,,	50	312	387	300	...	...	...	...	317	84	285	...	137	327	...	...	...	...	...	...	...	172	119
6	,,	40	362	306	323	...	...	...	302	331	59	274	372	121	326	...	...	309	...	...	...	...	137	170
7	,,	30	274	319	389	452	183	209	356	416	58	251	...	131	316	534	106	...	105	142	363	35	205	186
8	,,	20	273	294	271	...	...	...	...	457	39	282	406	131	323	...	...	349	...	...	...	...	253	231
9	,,	10	328	249	369	429	208	256	356	447	56	194	411	98	328	693	124	356	175	142	411	42	249	450

From this it appears that (1) serum of tuberculosis patients has small bactericidal power upon staphylococcus; (2) that mixed infections serum of tubercle bacillus and staphylococcus has more power than tuberculous serum; and (3) that mixed serum of normal and tuberculous patients has same power as (2).

TABLE XXV.—*With Serum of Tuberculous Patients against Streptococcus.*

No.	Dilution of emulsion, streptococcus, 5 c.mm.	1/1,000	1/10,000	1/100,000	1/1,000,000	1/5,000,000	Control. 1/5,000,000 No serum.
1	Ladner.	+	+	+	+	+	+
2	Werson.	+	+	+	+	+	+
3	Thompson	+	+	+	+	+	+
4	Hall.	+	+	+	+	−	+
5	Russell.	+	+	+	+	−	+
6	Webster.	+	+	+	−	−	+
7	Charles.	+	+	+	−	−	+

Time of test = 60 minutes.

This shows that 1/1,000,000 and 1/5,000,000 dilution killed streptococcus.

TABLE XXVI.—*On Anaerobic Culture with Capillary Pipette (Wright's New Method).*

No.	Dilution of emulsion, streptococcus, 5 c.mm.	1/100,000	1/1,000,000	1/5,000,000	Control. 1/5,000,000. No serum.
1	Russell.	+	+	+	+
2	Charles.	+	+	+	+
3	Harbed.	+	+	+	+
4	Moor.	+	+	−	+
5	Millington.	+	+	−	+
6	Webster.	+	−	−	+

These results are similar to those shown in Table XXV.

TABLE XXVII.—*With Serum of Meningitis Patients against Staphylococcus.*

No.	Dilution of emulsion, staphylococcus, 5 c.mm.	Time of test in minutes.	(Davis) No inoculation.	(Cambly) Two months' inoculation.	(Carmichael) No inoculation.	(Hodgson) No inoculation.
1	1/100,000	Control	782	325	325	325
2	,,	At once.	...	167	...	...
3	,,	60	668	113	144	89
4	,,	30	605	142	114	131
5	,,	10	440	125	133	149

Few microbes were therefore killed by this serum.

TABLE XXVIII.—*With Serum of Meningitis Patient against Streptococcus and Pneumococcus on Broth with Loop Pipette.*

No.	Dilution of emulsion, 5 c.mm.	Time of test in minutes.	Serum of meningitis patient.	Pos. or neg. on broth.
	Against Streptococcus.			
1	1/100,000	60	Davis.	+
2	1/1,000,000	60	Davis.	+
3	1/5,000,000	60	Davis.	+
4	1/5,000,000	Control.		+
	Against Pneumococcus.			
1	1/100,000	60	Davis.	+
2	1/1,000,000	60	Davis.	+
3	1/5,000,000	60	Davis.	+
4	1/5,000,000	Control.		+

TABLE XXIX.—*With Serum of Meningitis Patients against Meningococcus.*

No.	Dilution of emulsion, meningococcus, 5 c.mm.	Time of test in minutes.	(Cambly.)	(Carmichael.)	(Hodgson.)	Normal serum (K.S.)
1	1/100,000	Control.	13	13	13	13
2	1/100,000	60	1	2	11	0
3	1/100,000	30	0	1	8	0
4	1/100,000	10	4	1	12	0

The infected serum had less bactericidal action than the normal.

Conclusions.

I have drawn the following conclusions regarding the problem:—

1. The following microbes grow in normal serum: staphylococcus pyogenes, pneumococcus, pseudo-tuberculosis, streptococcus pyogenes, and M. catarrhalis.

2. Normal serum has a small bactericidal action upon the staphylococcus during the first hour of exposure, but after many hours its power decreases. Serum heated to 60° C. has no power. Normal serum has no bactericidal power upon the streptococcus.

3. Serum of tuberculous patients has smaller bactericidal power than normal serum upon the staphylococcus and streptococcus. Serum of those suffering from staphylococcal infections has a little stronger power than that of tuberculous patients. The serum of those suffering from tuberculosis and

staphylococcal infections at the same time has more power than the serum of those suffering from tuberculosis only.

4. The bactericidal action of my own serum after I had been inoculated with cholera and typhoid mixed vaccine was noticeable on both these bacteria, but otherwise was unchanged.

In conclusion, I must thank Sir Almroth Wright and the members of his staff who supplied me with the different materials for my experiments and gave me every assistance.

A CASE OF
ACUTE RHEUMATISM OCCURRING IN THE TROPICS.

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With Notes on the Heart by HAROLD T. SKAE, M.D.

IN view of the important conclusion reached by Mr. J. T. Clarke in his paper on the Geographical Factor in Rheumatic Fever,[1] I think the following case should be fully reported. The number of diseases about which it can be definitely postulated that they do not occur in the tropics, becomes less year by year as the closer settlement of tropical areas brings increased facilities for clinical and laboratory research. This being so, it would seem rash to exclude the very large and important group of ailments comprised under the terms "acute rheumatism" and "rheumatoid arthritis" from tropical diseases, on the rather equivocal evidence of the annual returns quoted by Mr. Clarke, or even the limited experience of the very small number of tropical practitioners who have put their opinion on this point on record.

Acute rheumatism is a disease which calls for special and energetic treatment if it does exist, bearing a resemblance in that way to diphtheria, about which the following remark from Castellani and Chalmers's "Manual of Tropical Medicine" is instructive. In speaking of cosmopolitan fevers in the tropics they say: "Diphtheria is more common than generally stated, but is *apt to be overlooked* owing to the old belief that it does not occur in the tropics." It seems to me that we have here a grave warning against accepting without the very fullest evidence a negative finding as to the existence of any acute disease in such a wide and diversified area as the tropics. The following case is the first to which I have paid close attention, but doubtless many more of a similar kind have been passed over or been loosely diagnosed as "rheumatism" without prefix, which term, as Mr. Clarke reminds us, is now banished from the nomenclature of diseases.

Marthan, a Tamil boy, aged 10 years, was admitted to Kamuning Estate Hospital on June 28th, 1915, complaining of acute pain and swelling of both ankle-joints. He presented the following symptoms. Both ankle-joints were considerably swollen and so painful as to render walking impossible. On the slightest palpation the patient winced and cried out. That apprehension of touch which causes shrinking even when the movement is made as if one intended examining the joints was observed. The heart impulse was very diffuse and produced a wavy motion, easily visible over the cardiac region. The apex beat was situated half an inch below and one inch outside the nipple line. On auscultation there was present a loud blowing systolic murmur. There was a history of slight fever for two days previous to admission. On admission the temperature was 100° F. There was no enlargement of the liver, and the splenic dullness was only very slightly more extensive than normal. Repeated blood examination gave negative results. No evidence of intestinal parasites was found on examining the fæces, either macro- or microscopically. Urine concentrated, no albumin. On the second day the temperature remitted, but rose again to 100° on the third day, and thereafter for three weeks it fluctuated, varying as to the first ten days between 99° and 101°, and afterwards from 98° to 100°. On the third day the case was seen and examined by Dr. McLean, who confirmed the presence of a very definite pericardial friction sound. From this date salicylate of soda, gr. v. thrice daily, was given. On the morning of the fifth day the left knee became swollen and painful. The pain in the left ankle had by this time subsided. By the tenth day the right knee had become very much swollen and was very painful. From this date the salicylate was increased to gr. x. thrice daily. Mr. Clarke saw the patient on the tenth day, but did not agree with the diagnosis on account of the absence of excessive sweating and anæmia. The presence or absence of sweating before this day had not been noted, but from then onward sweating was a marked feature. From this date the condition showed the fluctuation regarding the joints affected so characteristic of acute rheumatism. The cardiac condition also varied, but at no time was it normal. The pericarditis, however, was not evident. On the eighteenth day the boy was seen by Dr. Skae, who kindly reported on the heart condition as follows.

Notes on the Condition of the Heart by Dr. SKAE.

The chest is well formed for a Tamil boy of the patient's age. A diffuse wavy cardiac impulse is noticeable, having maximum intensity one inch outside the nipple line in the fifth left interspace. The diffuse wavy character is clearly felt with the hand. The deep cardiac dullness begins at the upper border of the second rib in the left parasternal line; on the fourth rib, just above and outside the nipple; and on the fifth rib, one inch outside the nipple line. The percussion dullness over the sixth rib in this line is resonant. The deep dullness extends on the right to one inch from centre of the sternum at the third interspace, and about one and a quarter inches at the fourth. The superficial dullness of the liver begins in the mammary line up the upper border of the sixth rib. There is dullness at the external angle of the fifth right interspace. On auscultation over the apical region the systolic sound is found to be accompanied by a soft, blowing murmur, audible as far as the mid-axillary line and faintly at the angle of the scapula. The second sounds are relatively loud both at the apex and over the tricuspid area. Over the aortic area the second sound is moderately loud. In the pulmonic area the first sound shows a roughish blowing systolic murmur, not traceable downwards towards the apex. In this area the second sound is noticeably low and frequently reduplicated. No pericardial friction rub was heard.

On July 24th the wavy impulse was less evident, but there was slight systolic retraction of the chest wall. Deep dullness now half an inch outside the left nipple line, in the fifth interspace, the upper border of the second left costal cartilage, and a quarter of an inch to the right of sternal margin. The heart was fairly regular, the systolic sound stronger, the apical murmur slight, accompanying and following the systolic sound. Accentuation of the pulmonic second sound was less marked. Over the apical region a rough superficial friction sound, of double rhythm and unmodified by cessation of respiration, was heard during some minutes, then lost, and again heard when the patient was made to sit up.

On July 27th the systolic murmurs were again louder in the apical and pulmonic areas. The rough pericardial friction sound was readily heard over the apical region, varying a good deal in loudness, but undoubtedly pericardial. The heart sounds were more distinct and loud than formerly.

On Sept. 1st the pulse was noticeably irregular, with occasional missed beats. The cardiac impulse had its maximum in the fifth interspace one inch outside the nipple line, the deep dullness extending from this to the right angle of the sternum. There was a faint blowing systolic bruit at the apex. It could be traced to the pulmonic area, where it was both louder and rougher. The second sound at the base was

[1] THE LANCET, June 5th, 1915, p. 1169.

slightly reduplicated, but the valves appear to close well. There was no apparent anæmia. No pericardial friction sounds were audible. The patient undoubtedly had an attack of acute pericarditis, and the cardiac condition was indicative of some degree of endocarditis of the mitral valve.

Taken in conjunction with the state and progress of the joints and the general history of the case, there can be little doubt that the cause of the cardiac lesions was acute rheumatism.

The case followed the usual rather tedious course. On the eighteenth day the right wrist was affected, this being the first, and only, time the upper limb was affected. It was most striking, because by that time both ankles had quite returned to normal and the patient and his attendants thought the trouble was nearly over, when he suddenly woke up one morning to find his right wrist swollen and so painful that he could not even attempt to feed himself.

Convalescence was slow, and it was only after nine weeks that he could be discharged from hospital, and even then, as shown by Dr. Skae's notes, the heart condition was far from satisfactory.

The diagnosis is simplified somewhat in this case by the youth of the patient. The disease for which it would be most easily mistaken is probably gonorrhœal arthritis. This boy has not yet reached puberty, as evidenced by the absence of secondary male characteristics. There has never been any infection of urethra or eyes. None of the joints commonly attacked by gonorrhœal arthritis, and rarely by rheumatism, were involved. Again, a gonorrhœal synovitis of this degree of intensity would not be likely to give rise to cardiac complications. The clearing up of one joint with the transference of inflammation to another is also not what one would find in gonorrhœal arthritis. General pyæmic infection is negatived by the course of the disease and the absence of suppuration. Rheumatoid arthritis would show bone deformity and lipping of cartilages, which were not present. Tuberculosis would have shown persistent temperature, and there would not have been the changing from one joint to another. Hereditary syphilitic arthritis is unaccompanied by fever or cardiac complications, and the affection is stationary in the joints first involved. There is no stigma of syphilis about the patient or his parents, all of whom were examined. Specific treatment, which was tried, had no influence on the condition.

It should be remembered that in later childhood, as in this case, the syndrome of acute rheumatism is modified in the most outstanding features. Thus Luff[2] says: "The profuse acid perspirations, so marked in adults, are not common in children." Baginsky[3] says: "Careful examination of the blood does not show any special findings." Ibrahim[4] says: "The joint pains are seldom so intense as to cause complete immobility." The same author also says that the temperature follows no particular type.

In view of the above facts I cannot see how this disease can be regarded as anything else than acute rheumatism, and I think the tropical practitioner who is called upon to treat a similar case—and they are not uncommon—will be well advised to diagnose acute rheumatism, and to institute at once the treatment and precautions suitable to that very serious malady.

Sungei Siput, Perak, F.M.S.

[2] "Acute Rheumatism," Gibson's Text-book of Medicine.
[3] Pfaundler and Schlossmann's Diseases of Children, vol. ii.
[4] Ibid.

EDITORSHIP OF THE "MILITARY SURGEON."—With the new year this American journal is to be edited by Lieutenant-Colonel Edward Lyman Munson, well known as an author and as an investigator of matters of military hygiene.

THE RADICAL TREATMENT OF RHEUMATOID ARTHRITIS.

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IT has long been surmised that the condition to which the name rheumatoid arthritis has been attached is of a toxic nature, and the evidence in favour of this view has of late years accumulated to such an extent that I need not here recapitulate it or discuss the various arguments with which it has been supported. Although, however, the toxic theory of the condition may be said to have gained very widespread, if not general, acceptance, it is a striking fact that the logical inference from it is only too rarely drawn—viz., that the treatment should above all be directed towards discovering and remedying the infective focus from which the pathogenic toxins have been absorbed. Anyone who has had the occasion to consider the matter extensively from this point of view must have been impressed, as I have been, by the prevailing neglect of this apparently simple principle, a neglect that entails most distressing consequences for the patient. If only this principle is taken quite literally and concretely valuable results can be achieved in the treatment of a malady that has hitherto proved singularly refractive to therapeutic effort.

There is no doubt that the usual line of treatment of rheumatoid arthritis by means of drugs, hydrotherapy, massage, electricity, radium, and so on is one charged with disappointment for both the patient and the physician, nor does the fact of its being carried out at a spa make the profound difference that one might be led to hope. After watching some hundreds of cases I have yet to see one in which the relief afforded has been other than either temporary or slight.

This unsatisfactory state of affairs I would attribute to the unambitiousness of the aims of such treatment, which is altogether palliative and does not attempt to remedy the pathogenic factors on which the morbid condition depends. I wish it to be clearly understood that I am not here referring to the acute destructive type of disease, the so-called "pyæmic" type, where there is a definite infection of the joints with micro-organisms. In the ordinary rheumatoid arthritis cases where the course is, on the whole, a chronic one punctuated by irregular exacerbations, I have invariably found that the fluid taken from the joints is sterile, as also is the blood. The disease is a toxic one and is due to the absorption of toxins, which first affect the nerve-supply to the joints and surrounding muscles; clinically it is found that disorganisation of the joints themselves is always a later phenomenon, often much later than the weakness and wasting of the muscles and the characteristic nerve pain. The obvious indication is, therefore, to search for, and deal with, the source of the toxic absorption.

There are certain predisposing causes to the onset of this disease, such as heredity, injury, exposure, worry, and malnutrition.

I may shortly comment on the result of my experience in the investigation of the cases from this point of view. The commonest foci of infection are enumerated below in the descending order of

their frequency; doubtless, however, the order given here would be modified by more extended experience.

1. *Oral sepsis.*—This is probably the most important and commonest cause of the malady, and in my opinion the increased frequency in the incidence of conditions of late years, noted by many observers, is not unconnected with the modern advance in the manipulative skill of dentists. The crowning and bridging on which they nowadays pride themselves—a form of dentistry most practised on the more well-to-do classes, because of the amount of time and cost involved in the work—often provides a fertile source of infection. I have seen at least 50 cases of severe arthritis brought about in this way. What happens is that a good tooth may have its nerve destroyed, and the canal enlarged so as to take a "post"; all this manipulation favours infection of the root canal, and the mischief is entirely concealed by the dental work; after some months the patient complains of rheumatoid symptoms and a skiagraph reveals absorption of the root and often an abscess cavity at its apex. The removal of one of these bridges has often exposed a large number of offensive roots causing severe inflammation of the gums all hidden by the mechanical work. Sometimes the gold crown has been driven down well below the gum margin, giving rise to local irritation and inflammation that has often proved a source of infection; pockets containing actual pus can be demonstrated in a large number of these cases. I now recommend, if a patient insists on wearing a bridge, that the fixing of the gold crown shall in no way come in contact with the gum, for attention to this point renders the danger of infection much less. In another type of case the gum has receded from the crown, leaving exposed that part of the tooth uncovered by enamel; small pockets containing pus can always be demonstrated in such cases. Yet another source of dental infection, which I have on many occasions seen, is that arising from the irritation and infection of an unerupted wisdom tooth, with perhaps necrosis of the alveolus.

During my appointment as pathologist at Netley a large number of cases of rheumatism were returned as unfit for duty. Most of these cases were of rheumatoid arthritis; the commonest source of infection was the teeth, and I feel sure that the recent decision of the War Office to enlist the services of surgeon-dentists will be followed by valuable results from this point of view.

2. *The tonsil.*—The inflammation is usually of the chronic follicular kind; pus can in many cases be pressed from the crypts and generally yields on culture a streptococcus. This form of tonsil should be completely removed, for no amount of antiseptic application will cure the condition. In old people, in whom it may not be wise to attempt enucleation, the cautery may be used with some improvement.

3. *Post-nasal space.*—Chronic suppuration here is in the majority of cases due to infection of a granular mucous membrane, and is often accompanied with some nasal obstruction, usually untreated cases of adenoids. After the obstruction has been attended to the whole post-nasal space should be got into a healthy condition. The micro-organism found here is usually a streptococcus or a pneumococcus.

4. *Female generative organs.*—This also is a very common type, and its frequency doubtless explains the circumstance that rheumatoid arthritis shows a higher incidence in the female sex; out of my last 80 cases, for instance, 60 were in women. Of this group much the commoner form is that characterised by chronic infection of the Fallopian tubes; it occurs especially in women between 35 and 45 years of age. There is usually a yellowish discharge, which if taken, as it should be, direct from the cervical canal, will be found to contain either a streptococcus or bacillus coli. A large number of cases are secondary to an infected appendix, and it is now recognised that not so many tubal cases are gonorrhœal as it was formerly thought. The treatment of the chronic cases must be surgical.

A smaller number of cases belonging to this group are due to ulceration of the cervix; the ulcer is usually situated on the posterior aspect or lower portion of the lip. It is accompanied by a general swelling of the cervix and some discharge from the canal. The treatment is to apply either pure carbolic acid or a 20 per cent. solution of silver nitrate to the ulcerated area, and to administer hot vaginal douches of some such antiseptic as creasol or perchloride of mercury. The organism that is generally found is a streptococcus.

5. *Cystitis.*—This may arise from trouble within the urinary tract, from gonorrhœa, prostatic enlargement, septic catheterisation, or it may be secondary to some pelvic infection such as tubal or appendicular inflammation. This type of case is usually due to the bacillus coli and reacts well to vaccine-therapy. I have seen within the last two months several cases of this type amongst paratyphoid and dysentery carriers; the urine of these patients on cultivation shows a large number of organisms.

6. *Rectal infection.*—In this group are to be included cases of hæmorrhoids with ulceration, ischio-rectal abscess, fissure, and fistula. The micro-organism is always bacillus coli.

7. *Appendicitis.*—The form of disease here is usually that of the chronic type with exacerbations from time to time, and in the majority of cases the urine contains the bacillus coli. In women the tubes may be implicated. A very striking improvement is to be seen in these cases if the appendix is removed and vaccine-therapy resorted to.

8. *Antral infections.*—I have seen several instances of this, though it is not at all a common cause of rheumatoid arthritis; in three the infection was of the antrum of Highmore, in one it was the frontal sinus. The infection here is usually a mixed one—pneumococcus and streptococcus. The Roentgen rays have been of great service in the diagnosis of these cases, as in this type, as in all others, the absorption is rarely from an acute inflammation but from a very chronic form, with few local symptoms or physical signs. This point is one which I lay great stress on, that rarely does one find a rheumatoid condition accompanied by acute suppuration, but by chronic lesions where the absorption of toxin goes on for years.

It is convenient to recognise the following types of rheumatoid arthritis marked off according to age, for they exhibit certain features characteristic of each:—

A. *The adolescent.*—The disease here usually attacks the larger joints, the knees, hips, wrists, and shoulders in this order of frequency, but should there have been an old injury to either of these joints this is the one first affected. It is accompanied by severe pain and the onset is more rapid than in the other types. It is often mistaken for tuberculous disease, and one has seen it treated as such with unfortunate results. I remember, for

instance, being called to see a case of this kind where one leg had been amputated above the knee and the opposite knee and hip being now attacked, and where the septic condition of the patient's mouth had been quite overlooked. The treatment of such cases is difficult, but if only the diagnosis is made early and the source of infection treated the results are quite good.

B. *Middle-age type.*—This commonly begins about the age of 40 and the largest number of all cases of rheumatoid arthritis belong to this group. It is the form of disease most amenable to treatment, provided the source of infection can be found and dealt with. Mention may be made of a sub-variety of this group, where the progress of the disease is rather more acute with exacerbations of acute swelling of the joint with fluid.

C. *Senile type.*—This occurs in patients over 50 and is not accompanied by much pain; it usually attacks the smaller joints to begin with; wasting of the muscles and deformity are pronounced. Owing to the absence of pain patients coming under this group rarely seek treatment until the condition is very far advanced, when, of course, it is less amenable to treatment.

Technique of Treatment.

The cardinal point of the treatment is disinfection of the original focus, but it is only in the early cases that removal of the source of infection will at once cure the condition. In the cases of longer standing the toxæmia itself has also to be treated and for this purpose vaccine-therapy has proved of great assistance. Ontogenic vaccines should always be prepared, the use of stock cultures being of little avail. The pathogenic organism can sometimes be isolated only with considerable difficulty; in such cases it is often possible to discover it in the urine, and this should always be examined if the organisms are not readily obtained elsewhere. The urine should be drawn off with all aseptic precautions into a sterile flask and incubated in bulk for 8 to 12 hours. This should now be inoculated on to suitable media. In the case of pus a swab is taken by means of wool attached to a sterile glass rod which it is convenient to keep in a sterile test-tube of about 7 inches length; broth is now inoculated by cutting off the wool end of the glass-rod with a sterile file and dropping it in. This is incubated for 12 to 18 hours, a slide is then made and stained, and plates of suitable media are then inoculated. For streptococcus, bacillus coli, and bacillus pyocyaneus I find the media suggested by Captain S. R. Douglas to be excellent; one can thus isolate the organism and obtain pure cultures, if necessary by re-inoculation. An 18 hours' pure growth is now taken and made into an emulsion with a 0·5 per cent. solution of carbolic in saline solution. It is well broken up with a mechanical shaker and then counted. The next process is to submit the emulsion to heat in a steam bath at 56° C. for 40 minutes; it is then stored in rubber-capped sterilised bottles and diluted as required.

The *dosage* is a matter that greatly depends on the type of case as well as on individual features in the patient, such as age; in old people one has to be more careful to avoid unpleasant reactions. In fairly acute cases I make a plan of beginning with a dose of five millions if the organism is a streptococcus, pneumococcus, or a diphtheroid bacillus, the dose being increased according to the reaction. With the bacillus coli I begin with ten millions in acute cases, and in the chronic cases, on the other hand, I begin with five times these doses.

The *reaction* may be one of three kinds—local, arthritic, and constitutional. The *local* reaction at the site of inoculation may be severe, especially in the case of the bacillus coli; usually it is little more than a slight inflammation and itching of the skin. The *arthritic* reaction is important as being the chief guide to subsequent doses employed. I always aim at bringing about a slight exacerbation of the joint symptoms, such as swelling, heat, and pain. If the patient is kept at rest this soon subsides, as a rule within a few days, but should there be much pain a local application of ice gives relief; when this subsidence has occurred the patient usually reports marked improvement. The next dose following a rather acute reaction should not be increased and there should be no great reaction. Following this the dose may now be increased until one has reached the following numbers: bacillus coli, and paratyphoid, two hundred millions; pneumococcus, streptococcus, pyocyaneus and diphtheroid bacilli, fifty millions. There should be an interval of from 7 to 10 days between the injections, and when there is very marked improvement this may be increased to 14 or 21 days; the treatment should be continued for at least a year, and if possible the injection should be given in the evenings. Some *constitutional* reaction may be complained of by a few patients; it consists of a general feeling of malaise, slight headache, sickness, palpitation, perhaps a rise of temperature with a slight rigor. The last-named symptom I have generally seen in cases inoculated with a vaccine of bacillus coli.

The usual forms of treatment should be administered simultaneously with the vaccine-therapy, including attention to the general condition, removal to a bracing climate if possible, massage, baths, tonics, and removal of sources of worry; but, as has been remarked above, none of these will cure the malady unless the cause of it is treated at the same time, and this means the removal of the septic focus, supplemented with specific vaccine-therapy. If full advantage is taken of these measures now at our disposal I venture to suggest that rheumatoid arthritis will lose most of its present terrors.

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Knightsbridge, S.W.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—A meeting of the General Council of King Edward's Hospital Fund for London was held on Jan. 10th at the offices of the Fund, 7, Walbrook, E.C. The following were present: Sir William Church, Bart. (in the chair); the Earl of Bessborough; Viscount Knutsford; the Hon. N. Charles Rothschild; Dr. Frederick Taylor, President of the Royal College of Physicians of London; the Right Hon. C. Stuart-Wortley, K.C., M.P.; the Hon. Sir Vezey Strong; Sir Francis H. Champneys, Bart.; Sir Owen Philipps; Sir John Tweedy; Mr. Frederick M. Fry and Mr. John G. Griffiths (honorary secretaries); Dr. Edwin Freshfield, M.D., and Mr. Walter Morrison. Mr. Griffiths stated that the governors had appointed the following new members of the General Council: the Hon. N. Charles Rothschild; Sir Walter Lawrance, Bart., and Sir Francis H. Champneys, Bart. The order of appointment, signed by the governors, of the members of the General Council, members of committees, and officers for the year 1916 was read. The resolutions providing for the work of the Fund for 1916, which were approved at the meeting of the governors and General Council held at St. James's Palace on Dec. 16th, 1915, were formally adopted.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

HAGEDORN'S OPERATION FOR DOUBLE HARE-LIP.

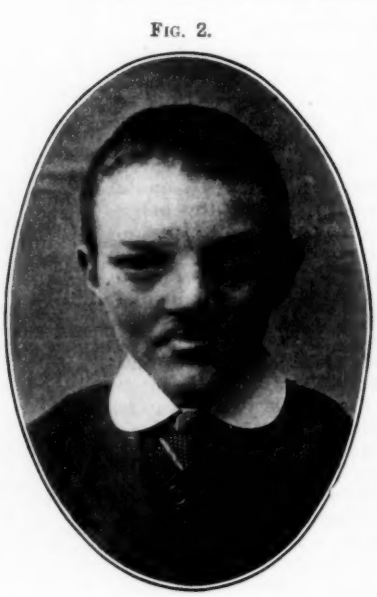
BY TOM BATES, JUN., F.R.C.S. ENG.,
HONORARY SURGEON, WORCESTER GENERAL INFIRMARY.

THE patient was a boy, aged 14 years, with double hare-lip. The premaxillary bone was removed, and the section of the lips made with a sharp-pointed tenotomy knife, sutures of silkworm gut being passed through and through. The illustrations show the condition before and after operation and the steps of the operation itself, the latter taken from Jacobson and Steward's "Operations of Surgery," fourth edition.

FIG. 1.

Before operation.

FIG. 2.



After operation.

FIG. 3.

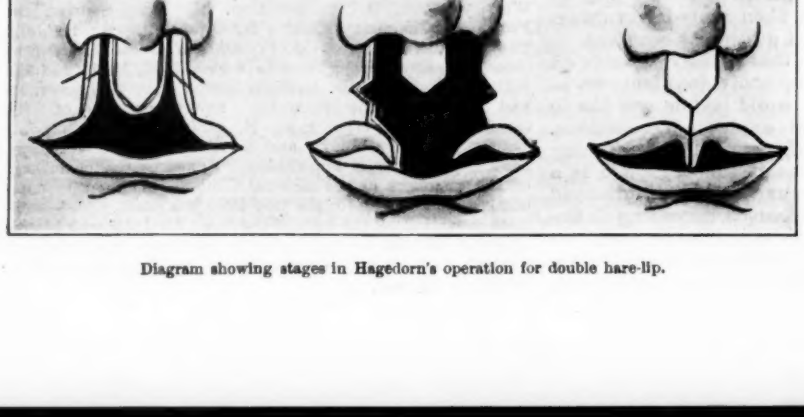


Diagram showing stages in Hagedorn's operation for double hare-lip.

A NOTE ON THE RESPIRATORY FORM OF PARATYPHOID.[1]

BY E. STOLKIND, M.D.

As a preface to this note I wish to state my conviction that paratyphoid infection as well as typhoid are only symptom-complexes. Referring both to cases which I have observed in Moscow and during my study in the clinics abroad and to those recorded, I have adopted and found useful the following clinical classification: (1) Influenzal or respiratory form of paratyphoid; (2) gastro-intestinal form; (3) choleraic form; and (4) typhoid form. As in most other diseases the clinical classification of paratyphoid is schematic, and based not only on pathological, but also on clinical symptoms. Apart from these typical cases there are not seldom found atypical cases or transition forms, in which the disease begins with a combination of two forms or with one form changing later into another. Further, besides these we meet cases of infection of separate organs, which we may call, for example, appendicitis paratyphosa, cystitis paratyphosa, and so forth. Paratyphoid can also appear as a secondary disease.

The first form of paratyphoid, which I have proposed to call the influenza or respiratory form, does not differ clinically from respiratory influenza. The first typical case I observed in Moscow.

A patient, 38 years of age, was suddenly attacked with coryza, cough, angina catarrhalis, headache, moderate fever, and lassitude; the spleen was slightly enlarged; constipation was present. On the ninth day several roseolar spots appeared on the abdomen. Pulse 78–94. The fever was irregular and lasted 14 days. After the first three days the patient perspired very much. Bacteriologically paratyphoid was shown to be present. Pfeiffer's bacillus was absent.

Later I observed other cases. Beliaew records in Moscow a case of paratyphoid B, in which coryza, sore-throat, cough, bronchitis, fever, sleeplessness, lassitude, and enlarged spleen were present. Allen described a case of paratyphoid in Australia; the attack began with coryza, cough, and

[1] Being part of a paper read before the Royal Society of Medicine (Section of Medicine) on Nov. 23rd, 1915.

headache. Baer observed an epidemic of paratyphoid B in 56 soldiers, all of whom had fever, conjunctivitis, and pharyngitis; some of them had also bronchitis. Grattan and Wood, and also Sufford, have observed cases of respiratory paratyphoid A in British soldiers in India, in "which the attack might easily be mistaken for the onset of influenza; in about half the cases there were symptoms of sore-throat and bronchitis; the conjunctivæ were suffused." Rolly observed a male, aged 22, with status typhosus, angina catarrhalis, acute laryngitis with erosions as in influenza. Wilucki has recently recorded an epidemic of 33 cases of paratyphoid B, in 7 of which the onset began suddenly with shivering, fever, lassitude, coryza, angina catarrhalis, bronchitis, conjunctivitis, and headache. Similar cases have been described by Bofinger, Conradi, Drigalski and Jürgens, Lenz, Walker, and others.

We may conclude, therefore, that a definite clinical form of paratyphoid exists, resembling influenza, and that the possibility of this disease being present must be borne in mind when influenzal symptoms occur.

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Reviews and Notices of Books.

Radium, X Rays, and the Living Cell.

With Physical Introduction. By HECTOR A. COLWELL, M.B. Lond., D.P.H. Oxon., late Assistant in the Cancer Research Laboratories, Middlesex Hospital; and SIDNEY RUSS, D.Sc. Lond., Physicist to the Middlesex Hospital. With 61 figures and 2 coloured plates. London: G. Bell and Sons, Limited. 1915. Pp. 324. Price 12*s.* 6*d.* net.

THE object of the authors is the description of the experimental facts showing the effects that the X rays and the rays from radium exert upon living cells. The book is divided into two parts; in the first the physical properties of the radiations are described. The introductory chapters are concerned with the explanation of the attributes of the X rays—photographic action, fluorescence, ionisation, and penetration. The details of the researches of Bragg, Moseley, and Darwin are given, in which an analysis of the rays by means of crystals has been realised. The X rays are capable of producing a continuous spectrum, since they contain different wave-lengths over a considerable range, and are therefore of the same nature as the waves of heat, light, and electricity, with the peculiarity that the lengths are very short. The remainder of the first part is devoted to the radio-active substances, uranium, radium, thorium, and actinium, and a full account of the α, β, and γ rays is afforded—the α rays consisting of positively-charged helium atoms with high speed, intense ionisative and small penetrative powers; the β rays with considerable penetrative power; while that of the γ rays is highest of all, and corresponds to a very hard type of X ray. The question how nearly the hard X ray approximates in penetration the hard gamma ray of radium depends upon the substance employed to test this power. The fraction appears to lie between one-fifth and one-thirtieth. Experimentation is still proceeding in order to produce harder X rays which will approach in quality that of the radium γ rays. In the case of the X ray, the penetration appears to be connected largely with the nature of the generator rather than with the X ray tube itself. The radio-active emanations, the "active deposit," and accurate methods of measurement of radium are then fully narrated.

Part II. is concerned with the chemical action of the rays. Commencing with the effects of X rays, radium rays and emanations on inanimate bodies like water, carbon dioxide, lecithin, sodium urate, colloids and enzymes, we pass to the results of their influence upon various sporozoa, infusoria, hydrozoa and rotifera, developing echinoderms, nematodes, upon the embryos of fish, amphibians and birds, and upon various species of bacteria and plant forms. Long chapters are given to the consequences of the activity of radium and X rays on the skin and the blood. Two beautifully coloured plates are reproduced from Clunet's researches on the skin. These are triple-stained with hæmatein-eosin-aurantia, after which the nuclei appear blue, the protoplasm and connective tissue red, and the keratin yellow. The effect on the skin depends both upon the wave-length of the particular X rays—soft rays, with twice the length of the hard rays, producing much greater reaction—and upon the manner of application, whether a single large dose or repeated small doses are administered. In acute dermatitis the upper layers of the epidermis, the hairs, glands, dermal papillæ disappear, and the deeper layers of the dermis become keratinised. In chronic atrophic radio-dermatitis there is also great sclerosis of the dermis, and the epidermis may be reduced to a few layers of living cells. In the vessels the lumina become narrower and the walls are thickened. Then follows a full description of the action of radium and X rays on the spleen, thymus, and thyroid. Repeated moderate clinical doses of X rays given to kittens, at intervals of a week, produce a permanent atrophy of the thymus. It becomes reduced to a mere fibro-adipose residuum. The X ray treatment of the status thymo-lymphaticus and thymic asthma can therefore be recommended as likely to be beneficial. On the thyroid neither macroscopical nor microscopical changes are to be discovered after the X rays, although, as radio-therapy teaches us, the effect on exophthalmic goitre is often considerable. If the thymus is enlarged too, the effect should be more immediate. A complete account of the action on the gonads is given. The spermatocytes and spermatogonia are destroyed, and of the cells of the seminiferous tubule those of Sertoli alone persist. The result appears to be due to a chemical and morphological alteration followed by resorption *in situ*. Similar destructive effects follow irradiation of the ovaries by the X rays—the Graafian follicles become atrophied and disappear. Bergonié and Tribondeau were led by these results to the formulation of the law that "immature cells and cells in an active state of division are more sensitive to the X rays than cells which have already acquired their fixed adult morphological or physiological characters."

The rest of Part II. is concerned with the effects of the rays on malignant cells, the production of malignant disease by the rays, idiosyncrasies of the human subject to the rays, certain physiological actions, and their selective and differential activities. The effect of radium has been studied on those tumours of rats and mic

which are freely transplantable by the simple process of subcutaneous inoculation. When such a tumour is excised and irradiated the experimental work of Wedd, Chambers, and Russ has shown that inoculation will not produce tumours; hence some alteration in the malignant cells has been produced which prevents their subsequent growth. The action on the cell is consequently direct. When irradiated *in situ* additional effects are the growth of connective tissue, the swelling and blocking of lymphatics and blood-vessels which tend to restrict metastasis. The tumour cells so treated can in certain cases induce an immunity of the animal into which they are inoculated. The degree of immunity conferred depends on the amount of exposure of the cells—an excessive length of time destroys the power of bestowing immunity. The desideratum appears to be the production of a paralysis of the cell's reproductive power only. In this direction must be sought the realisation of a rational prophylaxis. The general results are enlargement of cells, atypical mitoses, enlarged nuclei, keratinisation, phagocytosis, and finally the formation of a fibroid scar. In the discussion of selective and differential action the need for exact specification is enforced. With the X rays a range of several octaves of wave-lengths confronts the radiologist, and generalisations are impossible until careful attention is restricted to the effects of particular wave-lengths on the tissue-cells. But just as the absorption of the rays by metallic screens is highly complicated, so, in all probability, absorption by the different varieties of living cells, in the manifold phases of their life-cycle, must be more complex still.

The authors are to be congratulated on the production of a work which will at once become the standard treatise on the subject. The bibliography is extensive and up to date. To the radiologist the volume is indispensable. To the medical practitioner, who is struggling to keep pace with the results of radiology and whose time for reading is limited, a short résumé appended to each of the longer chapters would have been of considerable value. Perhaps this can be done in a future edition.

The Principles and Practice of Obstetrics.

By JOSEPH B. DE LEE, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School; Obstetrician to the Chicago Lying-in Hospital, &c. With 938 illustrations. London and Philadelphia: W. B. Saunders Company. 1915. Pp. 1087. Price 35*s.* net.

IT must be a matter of considerable satisfaction to Dr. De Lee that a second edition of his large work has been required within two years of the first. It was only in June, 1913, that a notice of the first edition appeared in these columns, when the work was welcomed as a valuable addition to the study of obstetrics. The style of the first edition has been followed. The book has been written both for the general practitioner and the student. The latter, as a rule, has not sufficient time during his curriculum to study a detailed work, and the former requires a comprehensive volume giving information on unusual cases. To meet the requirements of both the author has put less important matter and details of treatment in small type. Thus the volume can be used by a student preparing for examination, and will be of value to him subsequently when in practice as a work of reference. It is, however, more to the practitioner than the student that this work will appeal, for even excluding the small print there is more in this volume of a thousand pages than the average man who is reading for a pass examination will have time to master. But for those preparing for special examinations it should be of great assistance. The illustrations throughout maintain a high standard. As a rule a sketch or a diagram based on a photograph is reproduced instead of the actual photograph, and thus a more useful picture is obtained.

In the second edition the chapters on the Abderhalden reaction, "twilight sleep," extra-peritoneal Cæsarean section, among others, have been rewritten. At the present time, when hysterical articles in favour of the universal use of scopolamine-morphia anæsthesia ("twilight sleep") are unfortunately published in the lay press, it is instructive to read what actually occurred in the much-advertised Freiburg Clinic while Dr. De Lee was there. His experiences deserve to be widely published, as the testimony of such a trained observer is obviously of greater value than laudatory articles by non-medical people who may not be wholly disinterested. To quote from p. 302:—

> At this time I was in Freiburg and studied the method as practised there. It was at least unfortunate that the 10 cases I observed showed very bad results, confirming my own previous experiences with the drugs and those reported by others, which were as follows: Asphyxia and narcosis of the children; prolongation of labour, hours often and days sometimes; arrest of rotation of the head, the three conditions necessitating a more frequent resort to forceps; restless delirium, even violence; disturbances of heart and lungs; difficulty in preserving the asepsis of the delivery; post-partum hæmorrhage and uncertain results.

The writer, as a rule, tends to be dogmatic in the presentation of his own views and methods: hence there are several statements in the book with which everyone will not agree. For example, in suturing the wall of the uterus after Cæsarean section, the only method mentioned is by layers of continuous 20-day catgut. But involution will go on at such a rate that it is reasonable to think that a continuous suture will be loose before healing takes place, and many operators of experience are afraid to put catgut in an organ where autolysis is as active as in a parturient uterus.

As a whole, the volume is particularly well got up. The author has an easy and lucid style, and has embodied in his work many useful practical points from his experience of 21 years as an obstetric surgeon.

The Antiquity of Man.

By ARTHUR KEITH, M.D. Aberd., LL.D., F.R.C.S. Eng., F.R.S., Conservator of the Museum and Hunterian Professor, Royal College of Surgeons of England. With 189 illustrations. London: Williams and Norgate. 1915. Pp. 519. Price 10*s.* 6*d.*

IT is very certain that the majority of people would look to find a book with such a title as that Professor Keith has chosen a rather dull affair. But Professor Keith has the advantage of possessing a style of writing so distinctive that it may almost be defined as the manner of friendly and confiding guidance: the reader is made the writer's especial care, and he is conducted with much tenderness and every consideration upon a delightful pilgrimage which embraces romantic caves, quiet country-sides, valleys and river-beds, each in its most attractive aspect. He is treated with a friendly regard which makes a personal appeal from every page, and the past is explained to him in such a way

that the technicalities of geology and human anatomy offer no terrors for the least instructed reader. In a word, Professor Keith has written a delightful, as well as an exceedingly valuable, book which is sure to appeal to a wide circle of readers.

As is natural, the work embraces a mass of details upon the interpretation of which opinions differ widely; and it is to the great credit of the author that while he has made his own position perfectly clear, he has treated with outstanding courtesy the opinions of others. This applies especially to that large section of the book which deals with the famous Piltdown cranial fragments, the exact reconstruction of which has been the subject of much very earnest controversy. We note that Professor Keith looks upon *Eoanthropus* in the same way as he regards Neanderthal man "as a representative of an extinct form of man"—a form which, separating in early Pliocene times from the stock which culminated in modern man, presumably became extinct during the Pleistocene. The final sentence of the book may be quoted as a whole, since it sums up the author's opinion of the subject of his researches: "There is not a single fact known to me which makes the existence of a human form in the Miocene period an impossibility."

The book, as we have said, is written in most engaging fashion, and the illustrations, which are numerous, help the reader at every turn. We note a few clerical errors, mostly relating to numbers, such as "the two lateral lines which form the sides of the frame are 80 mm. from the midline. A skull wide enough to fill the space between these extreme lines would have a width of 180 mm. (7 inches)" (p. 341). Such trivial things merely need attention in a new edition; they do not detract from the merits of a book which deals fully and fairly, and in a pleasant manner, with a subject replete with interest yet bristling with difficulties.

Biology.

By GARY N. CALKINS, Ph.D., Professor of Protozoology in Columbia University. New York: H. Holt and Co. 1915. Pp. 241. Price 7*s.* 6*d.* net.

THE author of this volume is well known to us as an authority upon the protozoa and he has already crystallised his knowledge of that group in a text-book. In the present volume we have an elementary résumé of the anatomy of certain types of animals and plants, the former belonging exclusively to the invertebrate kingdom, together with a series of sections dealing with the general principles of biology. The work is not exactly a text-book for students (at any rate for students proposing to present themselves for examinations in this country); it is rather an introduction to the whole subject of biology to be studied concurrently with more detailed animal and vegetable dissections. The only animal types dealt with are three protozoa, the hydra, the earthworm, a tape-worm, and the American lobster. These are described in some detail, and a consideration of them, anatomically and otherwise, enables the author to bring forward a sufficiency of actual facts for the more general ideas of biology set forth by him. But although these are the only types that are systematically described, there is much reference in the general part of the volume to various details in the anatomy of other animals; and many of these facts are illustrated by figures in the text.

The more or less instructed reader should get a good deal of information about the leading departments of biology from this volume. But there are a few points in which Professor Calkins does not appear to be quite correct. He uses the term "insects" in a way which is not generally accepted. On p. 159 he distinguishes between insecta and arachnida, and so far quite correctly, but makes no reference to myriapoda. But a little later (on p. 182, under the heading "Insects") he appears to include all arthropoda that are not crustacea. At any rate, he refers to peripatus as an insect, which somewhat reminds us of the time-honoured jest of the railway porter and the tortoise. Again, Professor Calkins seems to understate greatly the numbers of species which constitute the various orders of existing animals. He writes that "it is estimated that more than 500,000 species of animals exist at the present time." Doubtless this statement is correct in one sense. There are without any question more than 500,000 creatures known to science. The real question is how many more. It is believed (by Dr. David Sharp and others) that of insects alone there are two million of species at least. We shall attempt no further estimates here.

The illustrations are very clear and good, and a number of them, particularly reconstructed solid diagrams of the structure of the earthworm, are made especially for this work. It is rather curious that in two figures of the genitalia of the earthworm the author has figured but not referred to the receptaculum ovorum, an organ which is also omitted in the text. In view of the more general aim of the book this may be regarded as a minor blemish. Of misprints there are but few, but there is one so colossal that we had thought the author intended the introduction of a new word. On p. 137 the calciferous pouches of the earthworm's œsophagus are referred to as the "sdnalgs." The word should be "glands."

LIBRARY TABLE.

Manual of Anatomy, Systematic and Practical, including Embryology. By A. M. BUCHANAN, M.A., M.D., C.M., F.R.F.P.S. Glasg., Professor of Anatomy in the Anderson College of Medicine, Glasgow. With 675 illustrations, mostly original and in colours. Third edition. London: Baillière, Tindall, and Cox. 1916. Pp. 1743. Price 21*s.* net.—It is little more than a year since the second edition of this well-known manual was reviewed in our columns, and now the third impression reaches us shortly after the news of the author's decease, who did not live to see its appearance. Although every section has been carefully and completely revised and some partially or entirely rewritten, the general character of the manual remains unaltered. Even the old anatomical nomenclature still stands, although the up-to-date student who may some time wish to discuss anatomy with a foreigner will find the international (Basle) nomenclature in an appendix of 20 pages. The only substantial addition to the manual is a new chapter on general embryology, which is concisely written and well illustrated. Its position is rather forlorn at the end of the volume, and another edition may perhaps see its transference to its logical place at the beginning. We expect to see many more editions of this popular manual.

Clinical Methods for Students in Tropical Medicine. By G. T. BIRDWOOD, Lieutenant-Colonel, I.M.S. Second edition. Calcutta and Simla: Thacker, Spink, and Co. 1915. Pp. 249. Rs. 2.8.—In noticing the first edition of this little book two

years ago we expressed the opinion that it might have a sphere of utility beyond the limits of India, and the reception which it has had confirms us in this view. The author has now thoroughly revised his work, with the help of suggestions from Major H. J. Walton, I.M.S., professor of pathology at Lucknow, and has added chapters on the character, identification, and dissection of mosquitoes, and the malarial survey of an Indian district from the pen of Major S. R. Christophers, I.M.S., director of the Research Institute at Kasauli, as well as directions by Captain Acton, director of the Pasteur Institute, Kasauli, for the removal and preservation of the brain of a supposed rabid dog. These chapters are in harmony with the practical character of the whole book. Certain small errors, which occurred in the first edition, have been removed, but the text is by no means free from minor blemishes.

Tropical Hygiene for Residents in Tropical and Subtropical Climates. By Sir C. PARDEY LUKIS, K.C.S.I., V.D., Director-General of the Indian Medical Service; and Lieutenant-Colonel R. J. BLACKHAM, C.I.E., R.A.M.C., Honorary Surgeon to the Viceroy of India. Third edition. Revised and enlarged. Calcutta and Simla: Thacker, Spink, and Co. Pp. 302. Price Rs. 3.—It is not much more than a year since we reviewed the second edition of this useful handbook, but the popularity of the work and the fact that a number of copies have been distributed by the Indian Council of the St. John Ambulance Association to Territorial officers serving in India have resulted in a rapid exhaustion of the issue. The authors have now taken the opportunity of thoroughly revising the text. Full descriptions have been added of hook-worm disease and Malta fever, and two new chapters on the sanitation of camps and hydrophobia in the tropics. In its improved form the book will doubtless have many readers, especially in India, although its lessons apply equally to other tropical climates, as the change of name in the subtitle indicates.

Old London's Spas, Baths, and Wells. By SEPTIMUS SUNDERLAND, M.D., President, Balneological and Climatological Section, Royal Society of Medicine. London: John Bale, Sons, and Danielsson, Limited. 1915. Pp. 169. Price 7*s.* 6*d.* net.—London, with its central river fed by many tributaries, was particularly rich in wells and springs from an early period of its history, and with a slight modification of circumstances the metropolis might have been at the present day a city of spas, wells, and watering places. Bad sanitation naturally led to the pollution of springs, many old wells were destroyed in the Great Fire of London, while the rapid growth of buildings and the construction of sewers were additional factors in the disappearance of many wells, some reputable, some of doubtful efficacy. In amplifying his presidential address, 1914, before the Balneological and Climatological Section of the Royal Society of Medicine and publishing it in book form, Dr. Sunderland has earned the thanks of medical men who take an interest in the historical side of their profession. Beginning with a sketch of the water-supply of Old London, the author next describes the holy wells, which in the early days were believed to possess miraculous properties, and the wells used for drinking purposes, several of which have preserved their names in London streets and roads. Of the baths of Old London only meagre information is obtainable. One of them, the Roman spring bath, still to be seen at No. 5, Strand-lane, is probably 2000 years old. The most interesting chapter is the account of the obsolete spas of London (sometimes spelt "spaws"), some of which contained distinctly medicinal properties and were popular as health resorts and places of diversion in the seventeenth, eighteenth, and nineteenth centuries. As Dr. Sunderland reminds us, the name spa is derived from the Walloon word *espa* meaning fountain, and takes its origin from the town of Spa famous for its chalybeate springs, some 16 miles from Liége. Of the spas of London eight existed within the radius of a mile from King's Cross, among them being the chalybeate wells at Islington, mentioned by Evelyn, patronised by the daughters of George II., visited by Beau Nash, and extolled by Lady Wortley Montagu. Other spas of historical interest described in this chapter are those of Hampstead, first heard of in the time of Charles II., which enjoyed great popularity in the eighteenth century, and the famous Epsom Spa. The concluding chapter contains a plea for the greater recognition of British health resorts, the waters of which possess a curative value equal to, if not greater than, their hitherto popular Teutonic rivals. The use that is being made of British spas for the cure of military patients is a sufficient indication of their value, and there is reason to believe that the public are at last becoming aware of the undoubted merits of home health resorts. Dr. Sunderland's monograph is well bound and is considerably enhanced in value by a careful bibliography and some 36 illustrations, most of them reproductions from old prints. There is also a very full index.

How to Become a Nurse. By Sir HENRY BURDETT, K.C.B., K.C.V.O. Ninth edition. London: The Scientific Press, Limited. Pp. 388. Price 2*s.* net.—This work is now of 20 years' standing, and is recognised as the best source of information on its subject. The editor notes the general tendency in special hospitals to extend the period of training to three years, and the remarkable improvement in recent years of the standard and system of training nurses of the Poor-law infirmaries. He congratulates the management of the majority of institutions concerned with the training of nurses on the continuous improvement which is taking place in the accommodation provided for them. The present edition contains the latest information concerning the British Red Cross Society and the Order of St. John of Jerusalem. The manual merits the success which has attended its publication.

Southall's Organic Materia Medica. By ERNEST W. MANN, B.Sc. Lond., F.I.C. Eighth edition, revised and enlarged. London: J. and A. Churchill. 1915. Pp. 390. Price 7*s.* 6*d.* net.—The eighth edition of this standard work succeeds the seventh after a lapse of six years, and has been brought up to date with the 1914 Pharmacopœia. The whole matter has been revised, but specially those sections dealing with the chemistry of drugs. To the teacher of pharmacy and for the pharmaceutical student, as well as the chemist and druggist, the book is of great value; to the medical student it can hardly appeal except as an occasional work of reference.

THE LANCET.

LONDON: SATURDAY, JANUARY 15, 1916.

A Medical View of the Gallipoli Adventure.

THE story of Anzac and Suvla will live in history as a failure more heroic than many successes, one which seizes on the imagination in the same degree as the Athenian expedition to Syracuse—which also failed. The Prime Minister has described the necessary evacuation of Gallipoli by our troops as one of the most poignant disappointments of his life, and the keen edge of regret is to be read in every line of Sir IAN HAMILTON'S dispatch. Where success depended as in this case on the smooth working of hundreds and thousands of separate plans and arrangements, it is impossible for the acutest analyst to select any one or more as the sole cause of failure, or at all events to command universal assent in so doing. The ultimate units of a vast movement like that planned for the occupation of the Turkish peninsula are the individual men and mules, each with an organism of infinite complexity and subject to varied and often conflicting influences. These units cannot be regarded as the molecules in a chemical reaction the result of which can be confidently foretold.

Sir IAN HAMILTON suggests in his dispatch some of the causes of the failure in Gallipoli, and it may be possible for the medical man to glean some further insight into certain contributing factors from Lieutenant-Colonel F. E. FREMANTLE'S account of the work of a regimental medical officer which we publish in another column. Thirst has been freely mentioned as one of these contributing factors. Sir IAN HAMILTON calls it "a sensation unknown to the dwellers in cool, well-watered England," and describes how "at Anzac, when mules with water *pakhals* arrived at the front, the men would rush up to them in swarms, just to lick the moisture that had exuded through the canvas bags." Colonel FREMANTLE speaks from his personal experience and shows us the untried soldier, straight from on board ship, landed in Suvla Bay under almost tropical heat upon an allowance of a pint of water in 24 hours, and this not always available. The hardened veteran of Helles and Anzac would have suffered under these circumstances, but we know well how training raises the ability to bear thirst and to do with a minimum of fluid. All medical men, and also all competent commanders of soldiers, know that courage and endurance, which to many appear as purely psychical attributes, may depend largely on the keeping up of the blood pressure by the adequate filling of the blood-vessels with fluid. It is easy to see from Colonel FREMANTLE'S description that heroism of the highest order was displayed by our young troops at Suvla Bay, but it is certain that thirst played a big part in the failure to snatch an immediate victory. How the lack of water was occasioned we need not stay to inquire, except to emphasise the fact that adequate thought had been given beforehand to its provision, for from Egypt, and even from distant India, receptacles of all kinds to hold 100,000 gallons, had been requisitioned, including "petrol tins, milk cans, camel tanks, water-bags, and *pakhals*," and that it was the distribution of the supply which was at fault.

Continued strain ensued upon the initial failure to make good a surprise attack, and was another contributing cause, through its medical results, to the eventual withdrawal. What havoc it played with the regimental medical officers is told by Colonel FREMANTLE. They by their habits and training might have been expected to bear it better than others, but one-third of their number succumbed within a day or two. But the advance in darkness under fire, through unknown, roadless, broken country, rock, and scrub, doubtless reacted specially on the less-trained man, and contributed towards the inertia which is pointedly mentioned by Sir IAN HAMILTON. Where, in spite of the same physical exhaustion, the troops persisted in advancing the result was tragic indeed, as in the case of the colonel who, with 16 officers and 250 men, "still kept pushing on," and was lost to sight and sound in the forest, never to return. Doubtless the medical lessons of the great failure, that was nearly a success, are as well worth further study as the strategic lessons. Some of these medical lessons lie upon the surface, many are possible to guess at, and others are clearly indicated in Colonel FREMANTLE'S letter. The essential message of that letter seems to us to be the need for attention to small points of detail. The critical period of an acute illness may sometimes be safely passed by minute attention to local and even seemingly trivial details. Attention to them alone will not save the patient if the main scheme of treatment be faulty or the bodily force insufficient to deal with the disease. As in civilian, so in military practice: granted good powers and wise guidance, the care of detail will prevent needless failure to surmount the crisis of an illness or of a battle.

Industrial Fatigue.

SOME of the most interesting of the medical questions that the present war has brought into prominence are connected with the circumstances of industrial fatigue. Not long ago physiologists confined their studies on fatigue largely to the manifestations in the excised bloodless muscles of a frog. But with the advent of MOSSO'S ergograph this was altered. The phenomena

exhibited by man in raising different weights under different conditions of stimulation were investigated, and the influence upon his energy of want of sleep, of the action of drugs such as alcohol, and of excessive brain work, were noted. The psychologists followed with a large number of experiments on the occurrence and effects of fatigue, and much valuable work was done, especially in clearing up the problems connected with mental fatigue in school life. And now the whole subject has become of general importance, in view of the pressing demand for materials of war. It is now seen by everyone, and not only by medical men and physiologists, that the conditions of labour in the munitions factory and in industries generally should be made favourable for obtaining the largest output; and to all that is understood under factory hygiene—ventilation, moisture of atmosphere, monotony of work, and the age, sex, and previous training of the workers—has to be added the factor of industrial fatigue. At the meeting of the British Association held in Manchester in September last an interim report of a representative committee was presented on "The Question of Fatigue from the Economical Standpoint." This report, of which we published a large abstract,[1] makes it clear that the subjective sensations accompanying fatigue must not be taken as an index of the objective symptoms or of the economic output of the worker. The question of industrial fatigue is, in fact, many-sided and is not limited merely to "output" and "accident incidence." Both of these are correlated with such further questions as excessive sickness, monotony of work, the relation of previous duration of work to the working period. It is also obvious that work and rest affect the organism oppositely. If there be lack of rest fatigue passes into exhaustion, a condition of diminished power of recovery.

Amongst recent investigations on the whole subject we may refer to the "Interim Report of an Investigation of Industrial Fatigue by Physiological Methods," by Professor A. F. STANLEY KENT, of Bristol (Home Office, 1915). The tests used were: For muscular sense, the ergograph; for the central nervous system, simple reaction time, the complex dilemma, acuity tests of vision and hearing; for the circulation, measurement of systolic blood pressure and electrocardiograms. The other systems were also investigated, but the methods available are much restricted in their industrial applications. The number of actual workers examined was limited, but a further report is promised. It is clear from the work that has been done that the number of accidents may be expected to bear some relation to fatigue and to vary with the nature and intensity of fatigue in different vocations. So far as causation of accidents in industrial occupations is concerned, they have been classified into the human or psycho-physiological factor—when the influence of the state of the worker's nervous and muscular systems preponderates; and purely mechanical factors—when causes exist outside or external to the victim, which can be regarded as beyond his control. In large steel works about 17 per cent. of the accidents have been found to be referable to external causes, while in the cotton trade only 10 per cent. could be so attributed, leaving a great balance of industrial accidents as attributable to psycho-physiological factors, the most important being fatigue. Amongst the outside conditions which influence the time-distribution of accidents, or the "accident incidence," as well as the output, is bad lighting. The effect is direct and has nothing to do with the working capacity of the industrial. In Wisconsin a firm of steel manufacturers increased its output at night by 10 per cent. by merely altering the illumination. The importance of lighting in factories and workshops is dealt with fully in the First Report of the Departmental Committee, Vol. I., 1914-15, as an official publication. To a certain extent any artificial and all bad lighting may increase accidents by fatiguing the eyes and attention. To a larger extent the relation of lighting to accidents is immediate, the distribution of accidents over the day being influenced by the growing objective invisibility of danger points. In this connexion it is encouraging to read in the "Annual Report of the Chief Inspector of Factories and Workshops" (1914) that "the importance of adequate lighting, both natural and artificial, is being appreciated more every year," and here the improvement of lighting produced by frequent lime-washing is pointed out. The lighting power may be quite adequate, but if the arrangement of the light is bad the same ill results follow. If we turn to stimuli affecting the ear in the form of noise, the railway factory at Swindon with its 50,000 people, who all practically live on the railwork, affords a striking object-lesson. According to Mr. ALFRED WILLIAMS, himself a workman there, who has recently published a book on "Life in a Railway Factory," in the workshops the demon of noise is rampant. "Everyone seems to be striking as quick as he is able. All the blows fall at once, and yet everything is in a jumble and tangle, loud, vicious, violent, confused, and chaotic—a veritable pandemonium. It is dreadful; it is overpowering; it is unearthly." Such a condition must aid the production of fatigue. In all conditions of healthy life ventilation is a most important affair, and in certain trades humidity and temperature are especially critical factors. The evidence is conclusive that in damp and warm conditions there is a disinclination or actual inability to perform active muscular work. M. S. PEMBREY has shown that a man is much less efficient in a warm moist atmosphere, and that he can do far more work with less fatigue at a low wet-bulb temperature than at a high one. In cotton-weaving, where a damp atmosphere is necessary, the natural tendency is for the nervous system to become less active and for muscular work to be diminished. Under ordinary conditions it is the physical and not the chemical

[1] THE LANCET, Dec. 4th (p. 1261) and Dec. 11th, 1915 (p. 1309).

qualities of the atmosphere which influence the health and vigour of the worker.

To all these well-known and obvious causes of industrial fatigue we have to add one which is of particular medical significance—we refer to the nervous disturbances among the workers caused by what is known as "speeding up." This may sometimes be necessary where the delivery of goods is very urgent, but it is an expensive process in the long run. In the middle of the last century E. H. WEBER showed that so far as muscular work is concerned there is a definite relation between the weight lifted and the height of the lift, and the main fact of mechanical work from a physiological point of view was then put in evidence. But the complexity of the human machine—if machine it be—has not yet been fathomed, and every day adds surprises to its possibilities and its limitations. One of the greatest problems that confronts those who direct factories working at express speed for the Government is the proper distribution of "rest intervals" in the working day or working week of those employed in these factories. A "rest interval" means an opportunity to put things back in their places, so that all may start afresh and with renewed energy. The committee appointed by the Minister of Munitions has realised the fact that there are limits to hours of daily labour beyond which no commensurate output is obtained. After long spells of continuous work it has been found that seven days' labour may only produce six days' output. It is written in Deuteronomy: "Six days shalt thou labour and do all thy work." From a medical point of view it would seem that the sooner the order is given for a resumption of this ancient and practical code the better it will be for all concerned. A day of rest may not be imperative, and many people can work for long spells with no relaxation whatever, but the result of continual stress in workshops is to damage the operatives without increasing the output.

THE NUMBERS OF THE MEDICAL PROFESSION.—We have received from the President of the General Medical Council the following statement regarding the number of medical practitioners and medical students registered in 1915:—

Medical Practitioners Registered.

	In 1915.	Annual average during the five years 1910-1914.
England	863*	591
Scotland	412	384
Ireland	251	197
Total	1526	1172

*This number includes 269 practitioners with Colonial and Foreign qualifications.

Medical Students Registered.

	In 1915.	Annual average during the five years 1910-1914.
England	754	620
Scotland	694	517
Ireland	470	304
Total	1918	1441

Annotations.

"Ne quid nimis."

SECURITY OF TENURE OF MEDICAL OFFICERS OF HEALTH AND SANITARY INSPECTORS.

Mr. Walter Long, President of the Local Government Board, has signified to Sir Philip Magnus that an Order has been prepared by the Board giving security of tenure to whole-time medical officers of health and to inspectors of nuisances who shall be appointed in future. Mr. Long, while expressing his entire approval of the Order, finds that the present moment is not a proper one for its issue, in view of the fact that many of the best men whose positions are in question are serving with the navy and the army, while generally the conditions of public health administration are for the time being abnormal. Sir Philip Magnus informs us that he has communicated to Mr. Long his agreement with the view that the present time is not opportune for the issue of the new Order, and this for the following reasons: First, because many of the best men who previously held these posts are now serving in the navy or army, and that it is undesirable that their places should be permanently filled by other applicants in their absence; and, secondly, because even when vacancies occur through death or resignation such vacancies cannot be so efficiently filled at a time when competition for the appointments is necessarily restricted owing to the absence of many competent men who might have been applicants. Sir Philip Magnus adds that advertisements have appeared in the press for medical officers to fill posts that have now been vacated by those serving in the army. It is clear that no security of tenure could possibly be given to the men selected by the local authorities for such appointments, as this course would deprive the present officers of any chance of resuming their former duties when the war is over.

LOCALISED TETANUS.

LOCALISED tetanus is rare. At the Académie de Médecine of Paris a number of cases in wounded soldiers have been recently described by different observers. M. S. Pozzi reported the following case. A soldier was wounded at Souchez on Sept. 25th, 1915, by shell fragments which passed through the left tarsus. The wound was dressed four hours later at the first-aid post. On the 28th 10 c.c. of antitetanic serum were injected. He was admitted to hospital on the following day. A little pus was discharging from the wounds of entrance and exit, but the general condition was good. On the 30th a drainage-tube was passed through the wound. During the day the pain in the wound increased and convulsive jerks were observed in the left leg at intervals of some minutes. They were very painful and attained a maximum on the slightest movement. There were no contractions in any other part of the body or any sign of trismus. In the evening the temperature rose to 100·4° F. From Oct. 1st to 4th the pain produced by the convulsions increased and they became more frequent and violent, and the temperature rose to 104°. On Oct. 5th the wounds were extensively opened up

and free fragments of bone were removed. On the 6th the temperature fell a little, but the convulsions become extremely frequent. Every 10 seconds the whole of the left lower limb was the seat of very painful contractions. Towards the end of the day some slight jerks appeared in the right lower limb. There were still no signs of contractions in other parts or any trace of trismus. Another injection of anti-tetanic serum was given. On the 7th the spasms in the left lower limb increased in frequency and violence, but they were more feeble in the right. The patient howled with pain and neither morphine nor a large dose of chloral gave relief. In the evening the temperature was 104·9°. On the 8th there had been no remission, and the left lower limb was contractured in flexion. The wound was not healing, though the suppuration had diminished. Amputation of the foot, which the patient demanded, was performed. The temperature fell to normal on the 10th, but the convulsions were unmitigated and became as marked on the right side as the left. Then they diminished on the right side and disappeared. After ten days the pain and spasms in the left limb diminished, but the contracture increased. On Nov. 6th the spasms had almost disappeared. In experimental tetanus the spasms begin in the region of the wound, and if the dose injected is very small may remain localised. In tetanus in man the spasms sometimes commence in the neighbourhood of the wound, and it has been asserted that if patients were carefully observed from the onset local spasms would always be found. The explanation of localised tetanus seems to be that the toxins are not in sufficient quantity to act upon the central nervous system generally, but affect the nerves of the part (monoplegic tetanus) or a segment of the cord (paraplegic tetanus). Of the latter form the preceding case seems to be the only one on record. In the discussion which followed M. Ch. Monod referred to a case in which the spasms were confined to the right upper limb. M. A. Routier reported six cases in which tetanus began by local sudden pain, generally in a limb, soon followed by spasm in the same region. Usually the wound was near the affected limb, but the rule was not absolute. Spasm in the muscles of the neck generally followed in two or three days. Trismus was present only in three cases. On the other hand, contracture of the abdominal muscles was present in almost all the cases. This form of tetanus proved just as grave as the ordinary disease, for three of the cases were fatal. Death was due to spasm of the respiratory muscles, which occurred without the muscles in general being affected. The sudden local pain is a most important early sign and should arouse suspicion of tetanus. M. Pozzi would not apply the term "localised" to cases in which the tetanus first affected a limb and then spread to the neck and other parts without, however, becoming quite general. For such cases he preferred the term "incomplete."

THE METROPOLITAN WATER-SUPPLY.

THE report on the condition of the metropolitan water-supply during the month of September, 1915, was issued last week. September was a warm, dry, and sunny month; the rainfall in the metropolis was 1·86 inches, being 0·14 inch below the average. Rain fell on five days, the maximum fall of 1·51 inches occurring on the 28th. All three raw waters (Thames, Lee, and New River) improved in chemical quality as judged by the albuminoid nitrogen, permanganate, and colour tests. Compared with the 1914 averages, the results yielded were better than their respective averages as judged by usual tests. The filtered waters also yielded results the same as, or better than, their respective averages, with certain exceptions according to the nature of the test applied. Bacteriological results, again, were consistent with chemical results, for all three raw waters contained fewer bacteria than their respective averages, while the filtered waters yielded, generally speaking, not unsatisfactory results. Whereas 86·4, 95·4, and 31·8 per cent. of the raw Thames, Lee, and New River water respectively contained typical B. coli in 1 cubic centimetre (or less) of water, 79·1, 63·6, and 82·7 per cent. of the filtered waters from these supplies respectively contained no typical B. coli even in 100 times as much water—viz., 100 cubic centimetres. It is evident that careful storage and filtration furnished the metropolis with very pure water during the month of September.

GUNSHOT WOUNDS OF THE CAUDA EQUINA.

Dr. Henri Claude and Dr. René Porak, attached to one of the French neurological hospitals organised for the war, contribute a valuable paper in the December number of *L'Encéphale* on Lesions of the Cauda Equina from Gunshot Wounds. The cauda equina is constituted by the second, third, fourth, and fifth pairs of lumbar nerves, and all the sacral roots. A bullet traversing the cul-de-sac formed by the lower portion of the spinal theca will rupture the meninges and occasion a certain amount of hæmorrhage which accumulates and compresses the roots. These are so mobile that they are rarely cut or torn by the projectile. In most cases the symptoms are bilaterally asymmetrical, diffuse, and variable, but they nearly always are referable to the distribution of the sciatic, which comes from the fifth lumbar, and first and second sacral roots. As a rule, the clinical picture begins with a complete flaccid paraplegia, sphincteric troubles, and trophic changes; sensory changes are also common, often in the form of radiating pains and paræsthesiæ, but after a longer or shorter period the symptoms begin to clear up with the absorption of the hæmorrhagic or inflammatory exudate. As at least two consecutive posterior roots must be damaged to effect a permanent cutaneous loss, the resulting sensory changes are sometimes very slight. From a consideration of 17 cases Dr. Claude and Dr. Porak find that, as a rule, they are less severe and less widespread than the motor symptoms. In regard to the latter, three types may be distinguished. In 7 cases out of 17 both inferior extremities were involved in paralysis of long duration; in 5 both legs were paralysed, but the paralysis rapidly disappeared from one side; in 5 the involvement was unilateral from the beginning. Amyotrophy comes on early and is sometimes profound. Urinary disturbances are always prominent in the syndrome. There is commonly some dissociation of motor and sensory symptoms in this connexion; vesical sensibility may be lost, with conservation of motility, or *vice versâ*. Motility, however, is more frequently present than absent; retention for the first few days is often followed by a degree of incontinence. A condition such as the following has been observed in not a few instances: the patient can empty his bladder voluntarily, and when at rest his

control is sufficient, but on rising or sitting down involuntary micturition takes place. The disturbance of rectal function does not follow identical lines; in the great majority of cases there is obstinate constipation. In only 3 of the 17 did incontinence succeed a period of constipation. The genital functions are usually abolished; in one instance, for 24 hours after the injury, frequent involuntary erection and emission took place. Some of the symptoms observed in the first week or two after the wound are clearly irritative phenomena; not infrequently there are severe radiating pains in the distribution of one or both sciatics. Speaking generally, the maximum of functional impairment is reached shortly after the lesion occurs; thereafter months may elapse with comparatively little change, yet in at least six cases the patient was able to walk again without assistance some six or nine months from the date of the original wound. In others the amelioration of the motor symptoms takes place with greater rapidity. Dr. Claude and Dr. Porak consider that their results negative the desirability of surgical intervention, or at least suggest that it should not be lightly undertaken. It is difficult to search for corresponding ends of sectioned nerve roots in the midst of a hæmorrhagic effusion. On the other hand, it is justifiable to remove metallic or bony fragments that are accessible. The risk of infection is considerable, for various reasons; the degree of spontaneous recovery after apparent complete motor and sensory paralysis is often so striking that the adoption of a conservative attitude is usually justified.

TUBERCULOSIS AND THE WAR.

THE war has necessarily cramped all medical activities apart from matters directly connected with the war. This restriction has applied especially to the measures for dealing with tuberculosis, and was perhaps inevitable in view of the fact that these measures are largely of recent date and their practical working out is still in a somewhat tentative stage. Granting that some restriction cannot be avoided, it is of fundamental importance to limit it to the less important fields of work. A symposium in the current number of the *British Journal of Tuberculosis* is devoted to the question of the effect of the war on the future of the tuberculosis movement. Regarding the matter from widely different points of views, the writers are nearly unanimous on two main points. In the first place, preventive work must at all costs be continued, and consumptive patients who are distributing infection far and wide must be controlled. And secondly, early curable cases in the young adult and in children must be adequately dealt with. The first point is vastly more important for the welfare of the race than all others, and is one on which all the great pioneers of tuberculosis work have never failed to lay stress. The removal of centres of infection is neither difficult nor costly. Sir Clifford Allbutt truly points out that the accommodation for advanced cases ought not to be expensive, and that "by homely quarters, kindly and instructed guardians, and very moderate demands upon skilled attendants, the evils of promiscuous herding of the advanced cases in crowded and often not very cleanly houses could be prevented and those patients placed in comfort for themselves and in safety for their fellows. Such modest efforts even a state of war should not forbid." The second point concerns the welfare of the individual. Sanatorium treatment must be provided for all those young adults in whom it is probable that a stay of a few weeks will turn the scale towards a recovery of health. As soon as possible the early cases should be drafted from sanatoriums to industrial colonies where they can engage in remunerative occupation. As regards children, Dr. Jane Walker urges that "every effort ought to be made to save all the children from babyhood upwards," and states with justice that it would be a real economy to provide residential sanatorium schools for tuberculous children. Open-air schools should be made full use of, and school clinics continued at full efficiency. These two lines of activity are essential and cannot be restricted in any way without serious menace to the public health at the moment and the future fitness of the community. On the other hand, it may be necessary to restrict institutional treatment for chronic cases of phthisis. Although much can still be done in such cases, yet the results obtained are not necessarily proportionate to the amount of trouble expended, and there may be neither sufficient means nor sufficient skilled supervision in the near future adequately to deal with them in institutions. In its place there must be further development of the system of home treatment under the supervision of nurses and health visitors who have had special experience in such work. This work must include the provision of separate rooms where necessary, at all events of separate beds for patients who spit, attention to cleanliness, the provision of spittoons, and all the small details on which the health of the patient and the safety of his family turn. In all this the "tuberculosis nurse" can perform immensely useful service. By thus relieving the pressure on the sanatorium beds accommodation will be available for the acute cases of tuberculosis in soldiers who return from the field. Much has been said of the probability of a large incidence of tuberculosis amongst those who are exposed to the rigours of the winter climate at the various seats of warfare. It appears that so far these expectations have not been realised, and it may well be that the healthy outdoor life, with abundant food and exercise in the fresh air, may be more than sufficient to counteract the bad effect of occasional physical overstrain. We know that a large proportion of industrial workers who return from the sanatorium to their previous occupation soon break down at it. Heretofore this has been attributed largely to the physical strain of the work itself. The war may be teaching us that relapse is far more dependent than we had realised on the indoor life of the home and the factory. A salutary result of campaigning may be the accustoming of the industrial population of this country to a habit of open-air life which may be a permanent health asset in the future.

THE CLINICAL VALUE OF THE WASSERMANN REACTION IN CHRONIC LIVER DISEASE.

Dr. Verdozzi and Dr. Urbani, of the Institute of General Pathology in Rome, have had an opportunity of investigating 26 cases of chronic disease of the liver (primary and secondary cancer, chronic hepatitis, &c.), in which the history and clinical signs, and sometimes the necropsy or biopsy discovered no grounds for supposing the existence of a syphilitic infection past or present. The results of these investigations are published in detail in

Il Policlinico of Dec. 1st, 1915. Nine of these cases, in 4 of which the diagnosis was confirmed by necropsy, had symptoms of primary or secondary hepatic tumour, and in 8 of them Wassermann's reaction was positive. The majority of the remaining 17 cases had cirrhotic lesions of the liver, and in these the reaction was positive in 9. Moreover, out of the 26 cases the reaction proved definitely negative only in 5. Dr. Verdozzi and Dr. Urbani made similar investigations in 27 control cases of acute hepatic affections or diseases of other organs, either acute or chronic, in which there was no evidence to point to a suspicion of syphilis. In all these cases the reaction was negative. Such results, although obtained in a small number of cases, are evidently of much interest; it could not be admitted that in the whole of the first 8 cases in which there was a positive reaction, a syphilitic infection was present, and considering the rarity of a positive reaction in individuals free from syphilis, and the fact that all these cases had a definite chronic hepatic lesion, it is highly probable that the reaction was due to the disease in the liver. Neither can the presence of jaundice be invoked to explain the positive reaction in the cases under review. The assertion has been erroneously attributed to Bar and Dauney that jaundice causes a positive Wassermann reaction independently of syphilis, whereas they merely drew attention to the fact that the serum of patients with jaundice retarded the production of hæmolysis. Dr. Verdozzi and Dr. Urbani's independent researches confirm this, for out of 13 cases with jaundice in the first series only 7 gave a positive reaction, while all the control cases with jaundice gave a negative reaction.

FRACTURE OF THE TRANSVERSE PROCESSES OF THE FIFTH LUMBAR VERTEBRA.

IN the *Boston Medical and Surgical Journal* of Dec. 16th, 1915, Dr. L. T. Brown and Dr. W. J. Dodd have reported a case of a fracture of the transverse processes of the fifth lumbar vertebra. A medical man, aged 42 years, gave the following history. When at college he had to stop playing football because of backache which came on after getting tired. Otherwise he had no trouble. For the past 12 years he had been treated for tabes by neurologists. The symptoms were backache, pains in the legs, absent knee-jerks, Argyll Robertson pupils, and an increasing ataxic gait. Attempts to control the pain led to the morphia habit. He was cured of this and then took a course of physical culture, which included riding on horseback. One day, while tired, he received while riding a sudden jolt which caused pain in the back. A few days later the masseur told him that the lower part of his back was black and blue. It was also tender. He suffered so much from pain in the back and legs, first in one and then in the other, depending on the movements, that he had to stop training. Examination two weeks after the injury showed a big man of muscular, but somewhat flabby, build. He had a distinctly ataxic gait. Many Wassermann reactions had been done, but none had been positive. In standing there was marked increase of the normal lumbar curve, with rounded shoulders and a forward position of the head. There was considerable limitation of the lateral spinal motions, especially in the lower lumbar region. There were two definite points of tenderness just inside the posterior superior spines of the ilium, in the position of the transverse processes of the fifth lumbar vertebra. A skiagram showed fracture of these processes. The sacrum was placed low between the iliac crests and the transverse processes of the fifth lumbar vertebra were large and broad. In hyperextension of the spine on the sacrum these processes would therefore be liable to impinge on the ilia or on the wings of the sacrum. To support the lower lumbar region and correct the increased lumbar curve, in the hope of relieving the strain on the transverse processes, a belt with a pad to bridge the lumbar curve behind and a pad to hold the abdomen in front was applied. After three days the pain down the legs was much less. Three and a half months later a skiagram showed callus formation, the patient was relieved from the pain in the back and legs, and the ataxia was much less. Any connexion between the ataxia and the fracture can only be conjectural.

COLLOIDS AND CATALYSTS.

Twenty years or so ago the significance of the colloidal state and of the action of catalysts was barely appreciated. Indeed, the investigations of Thomas Graham on colloidal bodies in 1861 and 1864 were then assigned so little importance that very sparse reference was made to them in the chemico-physical curriculum. We now must realise that Graham's work was the beginning of a study which has since led to results of the utmost importance, in regard not only to physiological changes but also to many large technical processes. The investigation of dialysis, or the diffusion of dissolved substances through organic membranes, instituted by Graham, has, for example, given us normal saline solution and has afforded us an explanation, founded on osmotic principles, of the physiological action of many substances. A further development of the same subject has led to a better understanding of the interesting phenomenon of adsorption—that property of colloids of taking dissolved substances out of solution. We are thus able to understand why it is that while iodine cannot be detected in appreciable amounts in sea-water it is readily found in seaweed. The seaweed is in this case the colloid which selectively adsorbs the very infinitesimal traces of iodine in the sea, and these, by a process of accumulation, become tangible quantities in course of time. There is also gold in sea-water, and given the right adsorbent it is possible that a material amount could be recovered by trailing through the sea a suitable colloid. The technical bearing of colloidal studies has also proved of the greatest importance. Without a clear conception of colloidal functions the metal filament (which was such an economic advance on the old carbon filament) of the electric incandescent lamp would perhaps not yet have been invented. As it is the filament is obtained from the extremely finely divided metal coagulated from what is called in colloidal chemistry its sol. The process reminds us of the use of colloidal metallic preparations in medicine which permit of the administration of metals in the colloidal form possessing bactericidal properties, but which, unlike their soluble salts, are relatively harmless to the animal organism. It may be remembered also that colloidal metals exhibit properties akin to the chemical catalysts. They can effect, for example, hydrolysis in the same way that an enzyme converts starch into sugar. Like the enzyme also the metallic catalyst can be poisoned or its action

stopped by the presence of substances toxic to the human organism, as, for example, arsenic, prussic acid, mercuric chloride, and so forth. It can be readily surmised that these properties have an important bearing on chemical and physiological processes the successful consummation of which may be dependent upon colloidal state or catalytic action and not on chemistry alone. Chemistry, at all events, does not completely account for the passage of substances in solution through an animal membrane, or the failure of others to pass; neither does chemistry explain entirely the action of the enzyme or catalyst, since both remain active and are unaltered after they have effected an enormous change. Catalysis is receiving a very remarkable application in industrial operations. By the merest trace of a metallic catalyst present the soft oils can be converted into hard ones by a process of hydrogenation. Without the catalyst present, although infinitesimal in amount, hydrogen alone effects no change. We may thus accept Ostwald's broad definition of a catalytic agent as "that material which affects the velocity of a chemical reaction without appearing in the final products." Like an enzyme, therefore, a catalyst is an agency of chemical action. Even water is a catalyst, since combustion will not take place under absolutely dry conditions. Such powerful affinities as hydrogen and oxygen and phosphorus and oxygen will not unite until activated by a trace of moisture. In view of these interesting discoveries it is clear that we may profitably give heed to the potentialities of infinitesimal quantities. In certain chemical operations it has often puzzled the manufacturer to explain why at one time a process worked more satisfactorily than at another. Ultimately it has been found that a trace of "impurity" has been the secret of the successful issue. The discovery of catalysts promises to give a powerful impetus to the progress of industrial chemistry.[1]

SEROUS ARTHRITIS DUE TO B. PARATYPHOSUS.

Dr. F. P. J. Doeleman has recently recorded[2] the case of an infant, fed on both breast and bottle, who had an obscure attack of mild fever lasting a week when it was three months old, with screaming and some vomiting. When this was over the left knee-joint swelled and became painful on touching or movement. Ten days later the left knee was two inches more in circumference than the right, and tense, with fluctuation; it was kept bent at an angle of 30 degrees by the infant. The bursa beneath the deep surface of the quadriceps femoris muscle was not involved, showing that this bursa had not yet grown into communication with the knee-joint. The swollen joint was not reddened, and the infant's temperature was normal. Among the various diagnoses considered and dismissed were syphilis, gonorrhœa, rheumatism, tuberculosis, septic infection, scurvy, and hæmarthrus. Spirit lotion was applied for a week without effect; the knee-joint was then aspirated, and all evidence of arthritis presently disappeared under renewed dressing with spirit lotion. The fluid withdrawn from the joint was grey and opalescent; it contained numerous white blood corpuscles, mainly polymorphs, with a few lymphocytes. It proved sterile on culture on agar, serum-agar, and Loeffler's serum. But on injection into a mouse it caused death in a fortnight, and the B. paratyphosus B, type Aertrijck, was recovered from the animal. A guinea-pig injected with the exudate at the same time as the mouse survived a month, but succumbed with a B. paratyphosus B infection. Dr. Doeleman assumes that the infant became infected with paratyphoid B by means of the rice-water, mixed half-and-half with milk, with which it was bottle-fed. He notes that its spleen was not enlarged when it was first unwell, and that there was no other case of illness in the house. He can find no similar case in the literature.

[1] Two excellent little books have recently been published by Messrs. J and A. Churchill on the subjects here broadly outlined. The first is entitled "An Introduction to the Physics and Chemistry of Colloids," by Emil Hatschek (pp. 107, price 3s. net); and the second "Catalysis and its Industrial Applications," by E. Jobling, A.R.C.Sc., B.Sc., F.C.S. (pp. 120, price 2s. 6d. net). We commend these to the notice of all who may be interested to learn further details in regard to the development of both questions.

[2] Nederl. Tijdschr. v. Geneesk., Amsterdam, 1915, ii., 1762.

AT a meeting of the Section of Odontology of the Royal Society of Medicine on Jan. 24th a paper will be read by Mr. W. Courtney Lyne, L.D.S., upon "The Significance of the Radiographs of the Piltdown Teeth."

THE death is announced, at the ripe age of 83, of Dr. Guido Baccelli, sometime professor of clinical medicine in the Roman University, President of the Eleventh International Congress of Medicine and Surgery, and Minister of Public Instruction in the Crispi Cabinet. A biographical notice will be given in a later issue.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE WEEK'S SUBSCRIPTIONS.

THE subscriptions to the Belgian Doctors' and Pharmacists' Relief Fund received during the week have been as follows:—

		Rs.
B.M.A., South India Branch (per Captain A. J. H. Russell, I.M.S., Hon. Treasurer)—	Dr. Mary Alexander... ...	15
	Dr. Margaret McNeil ...	15
	Major Chalmers, I.M.S. ...	50

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

During the Christmas vacation a number of Belgian pharmacists took advantage of a class arranged by the Pharmaceutical Society of Great Britain for instruction in English methods of dispensing and in the reading and translation of English prescriptions. The class, which was entirely gratuitous, lasted from 10 to 4 daily, Professor H. G. Greenish conducting the practical dispensing and Mr. H. S. Phillips the reading of prescriptions. We are glad to learn that the instruction given was much appreciated by the pharmacists who attended, Professor Greenish and Mr. Phillips being repeatedly thanked for the trouble they had taken in making and carrying out the necessary arrangements.

LITERARY INTELLIGENCE.—Messrs. Longmans, Green, and Co. have in the press an anthology of prose and verse by Dr. Robert Bridges, the Poet Laureate. It is to be entitled "The Spirit of Man, an Anthology in English and French from the Philosophers and Poets," and will be dedicated to the King.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

District Hospitals and Dispensaries in Bengal.

THE district hospitals and dispensaries in Bengal are, as the report for 1914 shows, increasing in number, and the Surgeon-General notices with satisfaction that the regular dispensaries of all classes treated over 5,571,000 patients, an increase of 380,000 in the year, while in addition 130,000 more patients received medical relief at certain mission and temporary epidemic dispensaries and at *hats* and fairs which were visited by medical officers, including those treated by the travelling medical staff of the Eastern Bengal Railway. It is clear that medical relief is being steadily brought nearer to the people, and they appreciate more and more the benefits to be derived from dispensaries and hospitals in the districts outside the great towns. The old difficulties as to nursing continue and they are very great; the only redeeming feature appears to be that the training of Indian women as nurses under the auspices of the Bengal Nursing Association has been started at some centres, such as Darjeeling and Kalimpong. It will be a long time, however, before any marked effect is produced. Malaria is, of course, the disease most commonly treated, and the want of funds checked the usefulness of the dispensaries in dealing with the disease by the quinine treatment.[1] Only a few of the district boards and none of the municipalities made the extra grants which Government had ordered to be given to cover the cost of this special treatment, and this remissness is to be regretted. The report mentions that in Calcutta the seasonal outbreak of plague was of an exceptionally mild character, the number of cases being the lowest recorded since the city was infected. Only 442 deaths occurred, and in December, 1914, for the first time for 16 years, Calcutta was officially declared free from plague. Unfortunately, there was a sharp outbreak of small-pox, nearly 1000 cases occurring as against only 69 in 1913, and the mortality from cholera was greater. Against this may be put fewer deaths from tubercle of the lung, though the incidence among Europeans was higher. The provision of special phthisis wards in the important hospitals is in course of being carried out, a reform which is urgently needed.

Hospitals in the Bombay and Madras Presidencies.

An interesting report, just issued by the Surgeon-General with the Government of Bombay, shows a considerably increasing tendency among the people of the Presidency to make use of hospitals. This is especially the case with women. There was last year an increase of 50 per cent. in the number of cases coming to the maternity wards of the hospitals and dispensaries; 31·3 per cent. of the increase occurred in Bombay, where it doubtless reflects the energy with which the Municipal Health Department are tackling the infant problem, and the remaining 19·9 per cent. occurred in the mofussil. If it were possible to provide a maternity ward with adequate nursing in each district it is probable that the number of admissions would increase enormously. Only a few of the mofussil hospitals and dispensaries have maternity wards and nurses. "So long as hospitals are without a proper female staff, beds for female patients will remain empty and those for men will not be so popular as they should be," is the Surgeon-General's comment on the fact that beds in hospitals in the Madras Presidency were not all of them occupied last year.

King George's Medical College, Lucknow.

The annual report on the King George's Medical College, Lucknow, states that the conduct of the students during the year was exemplary, they worked very well, and the percentage of passes in the University examinations was satisfactory. Twenty-five students were admitted to the college, and there were 99 students resident in hostels; permission to live out of the hostels is only given in exceptional cases. There were five students in the women's hostel, which was completed during the year and comfortably furnished. Classes for the training of health officers and sanitary inspectors are now held in connexion with the college, and certificates for qualification are issued to candidates who are successful in the examination. The students who attend these classes are selected by the sanitary commissioner, and the instruction is given by the professor of hygiene. The report mentions that King George's Hospital, in connexion with which the students of the college get their practical training, is now fully equipped for treatment and teaching, and has accommodation for 232 patients. In the anatomical block a cold-storage plant and room have been provided, and the women's dissecting room has been supplied with electric fans. Improvements still required include a cool chamber for the preparation of vaccines in connexion with the bacteriological laboratories.

Bombay New Medical College.

For some time past a great want has been felt in the Bombay Presidency, and particularly in Bombay, for a second medical college. Delay occurred on account of the difficulty of collecting funds, and nothing came out of a very eloquent appeal made to the citizens of Bombay and other wealthy people of the presidency by Sir Pheroseshah Mehta for funds to have another medical college in connexion with the King Edward Memorial Hospital, though an assurance was given that the Bombay corporation would cöoperate in the establishment of the college and its maintenance. A splendid opportunity has now been afforded to the corporation. A munificent offer of 12 lakhs of rupees has been made by Messrs. Payne and Co., solicitors, under instructions from the Hon. Advocate-General on behalf of the trustees of Mr. Gordhandass Sunderdass for the foundation of a second medical college in Bombay on the following conditions: (*a*) That the college should be established in connexion with, and be attached to, the King Edward Hospital. (*b*) That the college should be affiliated to the Bombay University, and proper provision should be made therein for giving instruction up to the highest medical degree of the University. (*c*) That the corporation should provide the necessary buildings and fully equip the college with all necessaries for giving proper instruction. (*d*) That the corporation should ever afterwards maintain the college and defray the necessary recurring expenses for the purpose. (*e*) That the professors and teachers to be employed at the college should all be properly qualified independent Indian gentlemen not in Government

[1] From another source (The Forty-sixth Annual Report of the Sanitary Commissioner for Bengal) we learn that a new form of quinine administration has been widely adopted. Twenty 4-grain pills of quinine sulphate are made up in a tube for a single treatment and sold for 4 annas. The packing is done in the Alipore Juvenile Jail. The salt is becoming popular as the benefits of quinine come to be appreciated by the people almost everywhere.

service. (*f*) That the college should be named the "Seth Gordhandass Sunderdass Medical College." The corporation at their meeting referred the matter to a committee for report, several members welcoming the splendid and generous offer, and expressing the hope that the committee would submit an early report accepting the gift.

Deaths from Wild Animals and Snakes in British India.

The Government resolution on wild animals issued recently shows that during the past year 1745 persons were killed by wild animals in British India, an increase of about 9 per cent. on the previous year's casualties. As usual, tigers were chiefly responsible, 646 lives having been lost through their depredations. In Ranchi alone a man-eater was responsible for a large proportion of the fatalities (289) in that district. The number of human lives lost by snake-bite amounted to 22,894, an increase of 1124 over the previous year's figures. The mortality in the Punjab was the highest for that province recorded in recent years. Here the echis viper was the greatest source of danger, and special measures to exterminate this reptile have been organised. The number of cattle killed by wild animals totals 94,746, a slight increase over the preceding year's total, due chiefly to better registration. Of the total mortality from wild animals, leopards claimed over 50 per cent., tigers and wolves coming next. Some 10,909 cattle succumbed to snake-bite during the year under report, and 25,903 wild animals were destroyed, including 1481 tigers, 6557 leopards, 3076 bears, and 3066 wolves. The total amount paid in rewards was Rs.1,91,181. The number of snakes destroyed was 118,816. The number of fresh licences issued under the Arms Act of 1878 dropped to 23,016, the total number in force during the year being 176,779, a decrease of about 5700.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Orange Peel as an Agent in the Intestinal Hygiene of the Soldier.

ALTHOUGH antityphoid vaccination has remarkably diminished the importance of the danger of typhoid in the armies, the intestinal hygiene of the soldier still remains a matter occupying the attention of the military doctor. During nine months at the front Dr. Rosenthal has employed for this purpose plain orange peel and has obtained interesting results from it. The idea was suggested to him by a research on the absorption of cellulose in the economy and its ability to replace agar-agar and similar products in the treatment of constipation. The method of employment is as follows. Fresh orange peel is boiled for half an hour in water. This first very bitter infusion is thrown away or utilised for washing or for the teeth. The peel is then boiled a second time for 30 minutes in slightly sugared water and afterwards spread out to dry. It is then ready for use. The peel of a single orange forms a sufficient dose to mechanically excite the evacuation of the intestine, but this evacuation is not purely mechanical. It is accompanied by a flow of bile of variable amount, and this biliary activity continues for several hours, and if intestinal lethargy returns is sufficient to counteract it. The dose can then be diminished. Dr. Rosenthal considers that it would be worth the trouble to study this method more methodically, for orange peel seems to unite in itself both cholagogue action and a mechanical stimulus to peristalsis.

Re-education of those Blinded in War.

M. Monprofit has laid before the Academy of Medicine the advantages of the method of Mlle. Mulot over the method of Braille as applied to the writing and reading of the blind. The method of Braille has rendered immense services, but is conventional and only links the thoughts of the blind patient with other patients educated in the same way as he has been, and only with classical authors and those few others printed in cryptographic characters.[1] The method of Mulot, although disposing of a very limited library, permits the blind patient constant relations with all those who do not know Braille. He is no longer limited to intercourse with the blind, but can write to all who can see and read, because the method of Mulot utilises the ordinary characters of writing, and a special pen allows the blind man to trace them without much difficulty.

Milne's Method of Prophylaxis in Scarlet Fever and Measles.

Scarlet fever belongs to the list of infectious diseases responsible for serious results in armies, and has claimed its victims in France during the present campaign. Professor Chantemesse has just laid before the Academy of Medicine the good results which he has obtained at the ambulance of the polytechnic school by the employment of methods based on those recommended by Dr. Milne.[2] The throats of scarlet fever patients were painted with 10 per cent. carbolised oil at three-hourly intervals day and night for the first 48 hours, and then twice a day for a further week. For children the strength of the oil was reduced. Daily frictions of the whole body with eucalyptus oil were used in addition. These measures have, in Chantemesse's experience, been sufficient to avoid the transference of infection.

Abscess due to Injection of Petroleum.

M. Laval has communicated to the Society of Surgery observations on gangrenous abscess due to injections of petroleum. Struck by the appearance of these abscesses M. Laval made careful inquiry and obtained confessions from the patients. He then enlarged his field of observation and resolved to undertake a comprehensive study of abscesses in general produced by injections of petroleum. M. Quénu has reported upon these observations. The abscesses were observed in the majority of cases in a special class of soldiers, chiefly those who have been guilty of misconduct and others who have come in contact with them. The men in question take care to have a plausible excuse ready; the abscess is at the site of an earlier lesion or of an earlier wound; it is the result of a fall, a blow, a false step, a prick with barbed wire, and so forth. Others, fearing to compromise

[1] An adaptation of Braille type to avoid this drawback was invented ten years ago by the director of the Hospice des Quinze Vingts (THE LANCET, Dec. 15th, 1906, p. 1693). The stamps employed have at one end a Braille letter and at the other the ordinary Roman letter which corresponds.

[2] THE LANCET, August 21st, 1915, p. 402. The current number of the *Annali di Medicina Navale* also contains an article recommending Milne's method to the medical officers of the Italian Navy. Should there be no need for isolation of these cases the troubles of medical officers at sea, whether in men-of-war or emigrant ships, would naturally be materially lightened. The rationale of the treatment is discussed by Dr. Rho, the editor, who recognises that in medicine empiricism has in the past often preceded scientific explanation. He hazards the suggestion that in scarlet fever and measles the infection may be carried by insects, and that the eucalyptus oil, by keeping these at a distance, prevents the spread of the disease.

themselves, say nothing, but if pressed for a reason they become agitated, weep, and confess. According to the confessions obtained, the instrumentarium consists of the ordinary morphia syringe which can be procured at the first-aid post or at a pharmacy. The contents are injected into the subcutaneous cellular tissue once or several times in succession. M. Laval has met with these abscesses from petroleum in the lower limbs, the forearm, the hand, but never in the arm, the most frequent site being the internal surface of the knee. The appearance of the lesions, the combination of phlegmonous and gangrenous processes, and the odour of the contents are characteristic points. M. Savariaud, continuing the discussion, stated that in the phlegmons produced by injection of petroleum multiplicity of foci does not necessarily imply multiplicity of punctures, and the dissemination may be due to the injection of a specially strong dose. This characteristic has special significance in the diagnosis of a self-provoked phlegmon, as there is no other cause which gives rise to multiple phlegmonous and gangrenous patches without visible point of entry.

Jan. 10th.

REPORT OF THE PRISON COMMISSIONERS.

IN the report of the Commissioners of Prisons and the Directors of Convict Prisons, recently presented through the Home Office to both Houses of Parliament, it is stated, *inter alia*, that extra diet has been allowed to prisoners in consideration of the special efforts made by them to complete articles required for army and navy stores. An earnest and patriotic desire to help in the manufacture of war stores has been very conspicuous among the prisoners. Attention is called to the report of Sir H. Smalley, the Medical Commissioner, on the general health of prisons, and especially to his observations as to the operation of the Mental Deficiency Act, which came into force on April 1st, 1914. The report states: "Our colleague points out very clearly the difficulties which have arisen, owing to the outbreak of war and other causes, in the execution of the Act, so far as it relates to inmates of penal institutions. We share his regret that the results have been so disappointing, and that the requirements of the Act have excluded a large number of cases which all those interested in prison reform had hoped would have been placed in a more suitable environment than a prison. We share his hope that, in due course, future legislation may remedy the defects which stand in the way of fuller application of the beneficent intention of the Act, and that when the present national crisis has passed public interest may be exerted to bring to fruition the admirable attempt which the Act embodies to dissociate from criminal surroundings those who cannot, from the state of their mind, be justly held responsible for the acts they have committed." We understand that subsequently to the publication of this report the Board of Control has taken over the London County Council Inebriate Reformatory at Farmfield, where it is intended to admit prison "mental defectives" instead of at the State institution near Liverpool, which has been temporarily surrendered to the War Office.

The Commissioners mention that reports generally from prisons all over the country agree as to the good effects of the early closing of public-houses on the prison population. On the subject of the alleged increase of drunkenness among women since the outbreak of war, the Commissioners remark that "in this matter it is not safe to rely too much on statistics. When there is more money to spend on drink, there is more money to pay fines, and the number of convictions may be reduced by the police being absorbed in other duties and by the instructions issued to them in certain cases to warn offenders instead of charging them. But so far as prison statistics go they do not support the view that drunkenness among women has increased."

The death-rate in local prisons from natural causes in the year ended March 31st, 1915, was 0·51 per 1000 prisoners received, the average for the previous 25 years being 0·50 per 1000. The death-rate from natural causes in convict prisons was 2·7 per 1000 of the daily average population, as compared with 7·4 in the previous year. Referring to this remarkable diminution the Medical Commissioner asks us to remember that the convicts form a relatively small population, and that considerable annual fluctuations necessarily occur. The number of persons in local prisons found to be insane and certified as such after reception was 126, as compared with 140 last year; and in convict prisons 26, as compared with 44. Of the 126 cases certified in local prisons 90 were found to be insane on reception, and 17 exhibited symptoms of insanity within a month of reception. Many of those who were in prison for some time before the usual symptoms of insanity were observed were known to be of weak intellect or mentally impaired on reception, or to have been previously insane. The number of prisoners who were released from local prisons on medical grounds (excluding 32 women released on the ground of pregnancy) was 30, and from convict prisons 3. There were two suicides in local prisons during the year and one in convict prisons. The number of prisoners formally recognised as being so feebleminded as to be unfit for the ordinary penal discipline was 494 in local prisons and in convict prisons 92.

The Chaplain-Inspector (Rev. C. B. Simpson), who, the Commissioners regret to say, is shortly retiring from the service, "furnishes his last report as to the religious, moral, and charitable influences operating in prisons. His retrospect of more than 30 years furnishes an interesting review of the changes that have taken place during that time. The Commissioners say: "We heartily endorse the praise he bestows on all—ministers of religion, lady visitors, aid societies, workers, secular and religious—who work day by day with patience and undiminished hope for the rescue and reinstatement of the criminal of both sexes and of all ages. We have before stated our firm conviction that it is to this organised effort of charity and goodwill which has been specially directed with increasing force during recent years to the visitation and after-care of prisoners that the yearly improvement of our criminal records, especially with regard to the young offender, is due."

Owing to the absence on military service of the Inspector of Inebriate Reformatories (Dr. R. W. Branthwaite) the usual annual report on State inebriate reformatories at Aylesbury and Warwick is omitted this year. The governor of the former institution reports that 20 inmates have been reeceived during the year from certified inebriate reformatories, while 31 have been discharged on expiration of sentence. He remarks with regard to the women committed to the reformatory that "there is no doubt they have been committed too late in their careers, and at a time when they have become far too hardened to be susceptible to influences that would reform them and teach them the value of leading a sober life. If magistrates took advantage of the Act and committed cases to reformatories at a younger age, and before the woman had become case-hardened, I believe there would be a far larger number of reclamations." There were 55 inmates under detention at the commencement of the year and 39 at its close. At Warwick (for male inmates) 11 cases were committed during the year. The number under detention at the commencement of the year was 17 and at the close 20.

The Commissioners express their regret that in consequence of the war it has been necessary to postpone the meeting of the Ninth International Penitentiary Congress which was to have taken place in London this year. They state that the preparations for the holding of the Congress were already far advanced when the war broke out. The meeting in London had been looked forward to with keen expectation by all interested in prison work in foreign countries and in our own dominions. From the United States in particular it was contemplated there would be a large representation.

The recent death of Professor Henderson, of Chicago University, the representative of the United States on the International Prison Commission, is deeply deplored by all who valued him for his active labours in the cause of prison reform.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned have been entered as Surgeons for temporary service in His Majesty's Fleet:—Dated Dec. 29th: William Taylor. Dated Jan. 4th: Ernest James Cooke and Ronald Kelson Ford. Dated Jan. 5th: John Murray Hiddleston and Alexander Moffat Dunlop.

The following appointments have been notified:—Temporary Surgeons: C. Warner to the *Victory*, for disposal; H. E. Thorn to the *Grafton*; T. S. Harrison to the *Victory*, additional, for disposal; D. M. Connan and E. P. L. Hughes, both to the *Victory*, additional, for Haslar Hospital.

ARMY MEDICAL SERVICE.

Lieutenant-Colonel Frederick J. Greig to be temporary Colonel whilst Assistant Director of Medical Services of a Division (dated July 4th).

The undermentioned Lieutenant-Colonels to be temporary Colonels whilst Assistant Directors of Medical Services:—Ferberd R. Bushwell (dated Nov. 10th). Percy Evans, C.M.G. (dated Dec. 6th).

ROYAL ARMY MEDICAL CORPS.

Harold Wilson Bruce to be temporary Major whilst employed at the Southwark Military Hospital (dated Nov. 1st).

Temporary Major Arthur L. Smith relinquishes his commission (dated Dec. 12th).

Charles Morley Wenyon to be temporary Lieutenant-Colonel (dated Jan. 1st).

Temporary Lieutenant John R. Askew relinquishes his commission (dated Jan. 7th).

Temporary Honorary Major Mervyn H. Gordon to be temporary Honorary Lieutenant-Colonel (dated Jan. 11th).

Temporary Captain William S. Dickie to be temporary Major (dated Jan. 12th).

The undermentioned temporary Lieutenants to be temporary Captains:—

Dated Aug. 7th: Leonard C. Somervell.

Dated Sept. 3rd: William Ormsby.

Dated Oct. 10th: Ernest W. Adcock and Archie R. Fraser.

Dated Nov. 10th: Alfred H. James and Robert C. Robertson.

Dated Nov. 21st: Stephen G. Askey.

Dated Dec. 1st: William H. Neil, Harold Dunkerley, Harry F. G. Noyes, Bartholomew J. Mullin, Ralph M. Soames, William A. Troup, Claude H. Mills, Meredith Ffoulkes, John N. Griffiths, Charles H. Harbinson, John H. Wilson, Robert W. Willcocks, Neil I. Sinclair, Walter S. Evans, Henry M. Joseph, Tobias R. H. Blake, Oscar P. N. Pearn, John A. N. Scott, John F. McG. Sloan, David R. Williams, Herbert H. Whaite, Thomas I. Bennett, Hugh B. Waller, James J. Dwyer, Timothy Meagher, Alexander H. R. Duncan, William B. Davy, and John M. Clements.

Dated Dec. 2nd: Robert D. Forbes, Reginald H. Lucas, Alexander W. Rattrie, Eslyn Marjoriebanks-Marcar, Robert B. Roe, Frank Garratt, David D. Logan, James E. M. Brown, Luke S. O'Grady, Edward E. Mather, John A. Cameron, John Jardine, Robert S. Miller, Wilfrid McFarlane, James T. Kirkland, and Hubert A. Harris.

Dated Dec. 4th: Michael P. Power, Herbert H. Prentiss, James V. Fiddian, John A. K. Brayton, Leonard W. Mortimer, Cecil L. Williamson, Cuthbert E. Dukes, John M. Land, Wilfred H. Alderton, Bertie R. G. Russell, William E. Bullock, Hugh R. Macintyre, Humphrey M. Stephenson, Arthur L. H. Rackham, Norman F. Graham, Alexander B. Cluckie, John MacArthur, Harry M. Gilmour, William H. Brodie, and Henry Caplan.

Dated Dec. 5th: Alfred C. Edwards.

Dated Dec. 6th: Maurice H. Whiting, Colin King, Donald Duff, Frank Hartley, Thomas E. Amyot, Frederick W. Hird, James R. Rigg, Walter J. Ronan, Edward J. Stubbs, Cyril G. Whorlow, and Henry H. White.

Dated Dec. 7th: Lewis A. Walker, Ernest P. Chennells, Reginald Sherman, Archibald L. George, John McA. Hill, Joseph S. English, Frank A. Murray, Montgomery Du B. Ferguson, Frederick R. Dougan, Ignatius A. Dowling, Samuel Campbell, John C. P. Bayley, George W. Fleming, Norman Booth, John N. Dobbie, and Sydney G. Billington.

Dated Dec. 8th: Edwin C. A. Smith, John W. C. Gunn, Henry Thwaites, Leonard D. Saunders, Stuart Murray, James Craig, Ernest D. Wortley, Thomas Duncan, John Lumb, John D. Harmer, Carl J. B. Buchheim, James A. Ireland, James A. Hendry, Frank A. Cooke, and Arthur J. O. Wigmore.

Dated Dec. 9th: Arthur V. Stocks.

Dated Dec. 10th: James R. Kemp, Guy Matthews, James D. C. Swan, William L. Hodge, Arthur V. J. Harrison, Robert M. Greig, Douglas H. D. Wooderson, Clare O. Stallybrass, Patrick J. S. O'Grady, Richard C. Monnington, Thomas B. McKendrick, Sydney J. Simpson, William H. Steele, and Victor Vesselovsky.

Dated Dec. 11th: William Morris, Cecil A. Boyd, and Noel R. Rawson.

Dated Dec. 12th: Carl R. B. Von Braun, Arnold C. S. Courts, Edwin L. Z. Fickling, and Frederick S. Rowland.

Dated Dec. 14th: James McK. Ferguson, Martin Hallam, and Stephen Nockolds.

Dated Dec. 15th: William Brown, Wilfrid R. Pagen, Herbert P. Shackleton, and Archibald H. M. Robertson.

Dated Dec. 16th: Rhys V. Powell, James Jack, Edward S. Johnson, William J. Henry, Harold Wacher, Erskine H. Worth, Herbert R. Ford, John B. Low, Alexander Mearns, Walter W. Hallchurch, Edward S. Chapman, Matthew J. Johnston, Robert B. Jackson, Francis J. O. King, Edward P. H. Vickery, Eric A. Lumley, John G. Moseley, William E. Graves, Oswald A. Gee, George Macleod, James J. Sinclair, Samuel B. B. Campbell, David H. Griffiths, David W. Jones, William F. Gibson, John Allan, George E. Genge-Andrews, and John H. H. Pearson.

Dated Dec. 18th: Edward E. Hobson, Leslie E. Pimm, Geoffrey R. Heard, John B. McCabe, Evan Evans, Edmund C. Fawcett, John Chisholm, Philip H. Rawson, George Richardson, William G. Thompson, James S. Hall, Hugh L. Apthorp, Edward Forbes, Edward L. Middleton, Samuel Lyle, and John Lee.

Dated Dec. 19th: Harold C. Godding.

Dated Dec. 20th: Francis G. Crookshank and Alfred G. Caldwell.

Dated Dec. 21st: William Miller, Harry G. Massy-Miles, Arthur G. G. Plumley, Kenneth D. Bean, Philip J. A. Seccombe, William S. Dickie, Joseph Graham, Edward W. Lawrence, George Pirie, Kenneth G. Hearne, Percival Butler, Alexander C. W. Knox, Albert E. S. Martin, Charles Sand, Herbert H. Raw, George L. Brunton, Thomas J. Burton, Geoffrey B. Richardson, and Robert J. Jones.

Dated Dec. 22nd: Donald O. Riddel, Arthur W. S. Christie, James E. Cook, and Francis De S. McMenamin.

Dated Dec. 23rd: Leslie C. Johnston, George Mitchell, Archibald Langwill, and Lacey Bathurst.

Dated Dec. 24th: John Warwick.

Dated Dec. 28th: Robert A. S. Sunderland, Mortimer Hynes, Norman G. Thornley, James S. Martin, Robert McL. Veitch, Edward Mansfield, David C. Hanson, William De M. Peyton, Martin M. Cruickshank, Harrold J. Pickering, David Haig, Alan E. Taylor, Edgar C. Myott, Harry Stanger, Hugh Faulkner, James Allison, James Gaston, and Cyril C. C. K. White.

Dated Dec. 30th: Alexander K. Cosgrave, William N. Watson, Leslie D. Roberts, Samuel R. Richardson, and Harry H. Carter.

Dated Dec. 31st: Hubert C. Mulkern, Francis O'Neill, George T. Mowat, Mortimer H. Pearson, John S. Martin, John Gibson, and Ronald B. Macfie.

Dated Jan. 1st: Robert G. Brown.

Dated Jan. 11th: Samuel Fleming and Arthur P. Woollright.

Dated Jan. 12th: Donald G. M. Munro and Gerald Scholfield, late Captain, the Hampshire Regiment (Volunteers).

The undermentioned to be temporary Captains:—

Dated Dec. 15th: Henry Harold Scott and James Harris Connolly.

Dated Dec. 19th: Marsham A'Beckett McCarthy.

Dated Dec. 22nd: Miles Bracewell Arnold.

Dated Nov. 17th: Major E. B. Hardy, C.A.M.C., to be temporary Lieutenant-Colonel.

The undermentioned Captains, C.A.M.C., to be temporary Majors:—

Dated Oct. 18th: J. D. McQueen.

Dated Nov. 17th: P. G. Brown.

Dated Nov. 29th: H. Jones.

A. W. Trefrey (dated Nov. 23rd) and T. A. Malloch (dated Dec. 15th) to be temporary Captains.

The undermentioned Lieutenants, C.A.M.C., to be temporary Lieutenants:—

Dated Dec. 4th: Vincent Keating O'Gorman, George Cooper, Reginald Charles Jeremie Stevens, and Ernest Fielden Nivin.

Dated Dec. 23rd: Charles Alfred Dupont.

The undermentioned temporary Lieutenants relinquish their commissions:—

Dated Oct. 20th: Harry F. MacKendrick.

Dated Jan. 12th: Ignatius P. Kelly.

The undermentioned temporary Honorary Lieutenants to be temporary Lieutenants:—

Dated Dec. 17th: Geoffrey Challen Linder.

Dated Dec. 21st: Gordon Stewart Terry and David Hamilton Derry.

The undermentioned to be temporary Lieutenants:—
Dated Oct. 3rd: Donald Mackay.
Dated Nov. 3rd: James Henry Cooke.
Dated Dec. 13th: John Gibson Craig, Reginald Simpson Harvey, Cecil Frank Rumsey, Henry John Nightingale, Harry Graham Smith, Laurence Fraser, Samuel Edward Thornhill Shann, Walter Duffy, Thomas Hill Twigg, Llewellyn Drysdale Innes Graham, Thomas Alfred Mayo, John Eric Cheesman, Thomas Lord Price, David Maxwell Clements, Herbert Maxwell Vickers, and John Cameron.
Dated Dec. 14th: Douglas Macleod Moffatt, Norman Navarra, and Harold Goodman.
Dated Dec. 15th: Herbert Harrison, William Joseph Ashby, William Herbert Blakemore, William Hamilton, Fred Miller Murray, George Thomson, William Spence Melville, and Harry French Johns.
Dated Dec. 16th: Leon Levene, Henry William Martyn Strover, Percy Stocks, Percy Edward Brandon Barrow, Patrick Allan Bennet Clark, Morley Chadwick, Davis Woodcock Daniels, and John Shaw Dunn.
Dated Dec. 17th: Vyvian Colmer and Cecil Roy Joyce.
Dated Dec. 18th: Robert Alexander Johnston, John McIntyre, William Jamieson Logie, Henry Arthur Giles Hadden, Donald Gregor MacArthur, and Donald Kerr MacDougall.
Dated Dec. 19th: William George Macdonald.
Dated Dec. 20th: Richard Seaver Dollard, Harold Ernest Bloxsome, Samuel Algernon D'Arcy, Francis Hannigan, Percy Athelstan Nightingale, Harold Francis Brice-Smith, Harold Coppock, Oliver Carlyle, Arthur Chance, John Joseph O'Kelly, William Charles Mence, and Percy Nicol Allman.
Dated Dec. 21st: Harry Hope Fisk, and Gordon Winstanley Spencer.
Dated Dec. 22nd: George Cuthbert Adeney, Charles Samuel Vartan, Alec Terris Gibb, John Kenyon Davies, William Wilson, Francis Michael Byrne, and John Smith.
Dated Dec. 23rd: Geoffrey Thomas Baker and Joseph Bogue Mackay.
The undermentioned to be temporary Honorary Lieutenants:—Dated Dec. 22nd: Arthur Tudor Edwards.
Dated Dec. 23rd: Ernest Ivor Davies.
Dated Nov. 19th: George Stanley Graham.

TERRITORIAL FORCE.

Royal Army Medical Corps.

East Anglian Field Ambulance: Ralph Jack Richard Mecredy to be Lieutenant, and seconded for duty with a Provisional Field Ambulance.
Western General Hospital: Lieutenants to be Captains: Thomas R. Bowen and Gilbert I. Strachan.
London Sanitary Company: John Tate to be Lieutenant. The undermentioned Lieutenants (temporary Captains) to be Captains: Frederick G. Caley and William J. M. Slowan.
South Wales Mounted Brigade Field Ambulance: Lieutenant Alfred W. W. Hayles to be Captain.
South Midland Field Ambulance: Captain Frederic E. France relinquishes his commission on account of ill-health.
Welsh Field Ambulance: Evan Williams Griffith (late temporary Lieutenant, Royal Army Medical Corps) to be Captain. Joseph Stephen Wallace to be Lieutenant.
East Lancashire Field Ambulance: To be Lieutenants: Cecil Hibbert, Francis William Schofield, and Ernest Hulme.
East Anglian Casualty Clearing Station: Lieutenant Joseph Green to be Captain.
North Midland Casualty Clearing Station: To be Lieutenants: John Webster Archibald and Claude Stewart James Kearney.
Home Counties Field Ambulance: John James Cecil Hamilton to be Lieutenant.
Southern General Hospital: Captain John Wallis Gill to be Major.
Notts and Derby Mounted Brigade Field Ambulance: Lieutenant Guy Witton Miller to be Captain.
London Casualty Clearing Station: Hamilton Drummond (late Lieutenant, Northumberland (Hussars) Yeomanry) to be Lieutenant.
Wessex Casualty Clearing Station: Captain Arthur E. Huxtable, from London Field Ambulance, to be Captain.
Attached to Units other than Medical Units.—Lieutenant-Colonel Charles Graham Grant, from the Territorial Force Reserve, to be Lieutenant-Colonel. Lieutenants to be Captains: William L. Griffiths, William N. P. Williams, Norman P. Laing, and Robert B. Reed. Alexander Stewart to be Lieutenant.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Ex-Cadet Serjeant George Turner Gimlette, University of London Contingent, Officers Training Corps, to be Lieutenant (on probation).

INDIAN MEDICAL SERVICE.

Lieutenant-Colonel L. G. Fischer has reverted to the United Provinces; Major W. W. Browne, R.A.M.C., has been appointed Deputy Assistant Director of Medical Services (Sanitary) of the 9th Secunderabad Division; Major J. H. Robinson, R.A.M.C., has been appointed Deputy Assistant Director of Medical Services (Mobilisation) of the 2nd Rawal Pindi Division; Major R. D. Saigol has been appointed Specialist in Ophthalmology; Captain F. R. Coppinger, R.A.M.C., has been appointed to the charge of the Brigade Laboratory, Aden; Captain H. C. Buckley has been appointed Specialist in Advanced Operative Surgery; Major D. G. Carmichael has been appointed Specialist in Midwifery and Diseases of Women and Children, 3rd Lahore Divisional Area; Lieutenant-Colonel A. Coleman, civil surgeon, has been posted to Rawal Pindi; Lieutenant D. Bhardawaj has been appointed to the medical charge of the Depôts, 14th and 15th Sikhs, and Cantonment General Hospital, Multan; and Lieutenant O. R. Unger has been posted to the 105th Mahratta Light Infantry.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

Since the early days of the war the *Journal of the Royal Army Medical Corps* has been dated a month or two behind the actual date of issue, but the current number is dated December, 1915, so that the journal is now only a month behind time. This issue opens with an excellently illustrated preliminary note on the Treatment of Abdominal Wounds in War, by Colonel Cuthbert Wallace, consulting surgeon to the British Expeditionary Force, who states that the mortality of abdominal wounds must always be very heavy, but that the results obtained by operative treatment are most encouraging. "No one," he says, "who had the opportunity during the last few months of operating on such cases has any doubts as to the success to be gained by this method." Some Clinical Observations on Cerebro-spinal Fever is the title of a joint article by Lieutenant-Colonel E. A. Bourke and Captain R. G. Abrahams, Major Sydney Rowland contributing the bacteriological part. In the Treatment of Jaw Injuries, by Messrs. Montagu F. Hopson, J. Lewin Payne, Frank J. Pearce, and Stanley P. Mummery, a résumé of a system of treatment is given with a view to drawing the attention of surgeons generally to its possibilities. "Deformities," say the authors, "have become firmly established which might have been prevented or corrected by the application of interdental appliances at the commencement of the treatment. The minimising of such deformities and the prevention of impaired function depend upon the immediate coöperation of surgeons and of dental surgeons possessed of the skill and experience in the treatment of injuries of the jaw as such as general hospital practice alone affords." Other articles are a Report on the Bacteriological Examinations carried out at the Manchester Cerebro-spinal Fever Laboratory (Public Health Laboratory) during the Year ending July 27th, 1915, by Captain A. Sellers, and Further Notes on the Rapid Preparation of High Titre Agglutinating Serum for Meningococcus, by Captain T. G. M. Hine. Temporary Lieutenant-Colonel Wenyon's Observations on the Common Intestinal Protozoa of Man: Their Diagnosis and Pathogenicity, which was published in THE LANCET on Nov. 27th, 1915, is reprinted, and Colonel R. H. Firth makes a further contribution to his always interesting and instructive "Musings of an Idle Man."

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8241 births and 4990 deaths were registered during the week ended Saturday, Jan. 8th. The annual rate of mortality in these towns, which had been 15·7, 14·9, and 16·6 per 1000 in the three preceding weeks, fell in the week under notice to 14·3 per 1000 of their aggregate population, estimated at 18,136,180 persons at the middle of the year 1914. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 15·5, against a corresponding rate of 16·2 per 1000 in London. The death-rate during the week ranged from 5·9 in Hornsey, 6·3 in Rhondda, 6·9 in Ilford and in Reading, 7·8 in Willesden, and 8·5 in Walthamstow, to 21·1 in Dudley and in South Shields, 22·6 in Gloucester, 22·9 in Tynemouth, 23·3 in Blackburn, and 26·2 in Hastings.

The 4990 deaths from all causes were 794 fewer than the number in the previous week, and included 312 which were referred to the principal epidemic diseases, against numbers rising from 298 to 355 in the three preceding weeks. Of these 312 deaths, 81 resulted from measles, 73 from infantile diarrhœal diseases, 61 from diphtheria, 57 from whooping-cough, 30 from scarlet fever, and 10 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0·9 or 0·1 per 1000 less than that recorded in the previous week. The deaths attributed to measles, which had been 75, 84, and 100 in the three preceding weeks, fell to 81, and caused the highest annual death-rates of 1·4 in Burnley, 1·5 in Bath, 2·1 in Stockport,

and 2·2 in Bristol. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 68, 68, and 80 in the three preceding weeks, fell to 73, and included 14 in London and 6 each in Birmingham and Manchester. The fatal cases of diphtheria, which had been 65, 61, and 79 in the three preceding weeks, declined to 61, of which 17 occurred in London and 3 each in Hastings, Stoke-on-Trent, Birmingham, and Liverpool. The deaths attributed to whooping-cough, which had been 60, 69, and 60 in the three preceding weeks, further fell to 57; 12 deaths were recorded in London, 6 each in Birmingham and Sheffield, and 3 each in Liverpool and Manchester. The deaths referred to scarlet fever, which had been 19, 28, and 22 in the three preceding weeks, rose to 30, of which 6 were registered in London, 3 each in Liverpool and St. Helens, and 2 in Birmingham. The fatal cases of enteric fever, which had been 11, 9, and 14 in the three preceding weeks, fell to 10, but showed no excess in any particular town.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 2582, 2462, and 2464 at the end of the three preceding weeks, fell to 2325 on Saturday last; 225 new cases were admitted during the week, against 245, 206, and 254 in the three preceding weeks. These hospitals also contained on Saturday last 1483 cases of diphtheria, 60 of enteric fever, 28 of measles, and 12 of whooping-cough, but not one of small-pox. The 1156 deaths from all causes in London were 347 fewer than in the previous week, and corresponded to an annual death-rate of 13·3 per 1000. The deaths referred to diseases of the respiratory system, which had been 357, 329, and 346 in the three preceding weeks, declined to 246 in the week under notice, and were 251 below the number registered in the corresponding week of last year.

Of the 4990 deaths from all causes in the 96 towns, 224 resulted from different forms of violence and 456 were the subject of coroners' inquests, while 1386 occurred in public institutions. The causes of 44, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Sheffield, Leeds, Bristol, West Ham, Bradford, and in 69 other smaller towns. Of the 44 uncertified causes of death, 9 were registered in Liverpool, 7 in Birmingham, 3 in London, and 2 each in West Bromwich, Dudley, Southport, Blackburn, Preston, Barrow-in-Furness, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,355,300 persons at the middle of this year, 1193 births and 719 deaths were registered during the week ended Saturday, Jan. 8th. The annual rate of mortality in these towns, which had been 19·7, 17·0, and 17·4 per 1000 in the three preceding weeks, fell to 15·9 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 17·9, against a corresponding rate of 15·5 per 1000 in the large English towns. The death-rate during the week ranged from 10·7 in Hamilton, 12·6 in Clydebank, and 14·0 in Kilmarnock, to 19·0 in Aberdeen, 22·9 in Coatbridge, and 25·5 in Greenock.

The 719 deaths from all causes were 63 fewer than the number in the previous week, and included 72 which were referred to the principal epidemic diseases, against 50 and 74 in the two preceding weeks. Of these 72 deaths, 19 resulted from diphtheria, 18 from scarlet fever, 17 from measles, 10 from infantile diarrhœal diseases, 6 from whooping-cough, and 2 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·6, against 0·9 per 1000 in the large English towns. The deaths attributed to diphtheria, which had been 14, 8, and 11 in the three preceding weeks, further rose to 19, and included 4 each in Glasgow, Edinburgh, and Aberdeen, and 3 each in Dundee and Paisley. The deaths referred to scarlet fever, which had been 11, 12, and 21 in the three preceding weeks, fell to 18, of which 6 were recorded in Edinburgh, 5 in Glasgow, and 2 in Aberdeen. The fatal cases of measles, which had been 24, 16, and 26 in the three preceding weeks, fell to 17, and included 6 in Greenock, 4 in Glasgow, 3 in Edinburgh, and 2 in Coatbridge. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 8, 11, and 11 in the three preceding weeks, were 10 last week, and included 3 each in Glasgow and Aberdeen. The 6 deaths attributed to whooping-cough, of which 3 occurred in Aberdeen, were 3 in excess of the weekly average recorded last quarter. The fatal cases of enteric fever were registered in Glasgow and Ayr.

The deaths referred to diseases of the respiratory system, which had declined from 322 to 155 in the six preceding weeks, further fell to 139 in the week under notice, and were 126 below the number registered in the corresponding week of last year. The deaths from violence numbered 42, against 28 and 32 in the two preceding weeks.

Correspondence.

"Audi alteram partem."

SPECIFIC SEROLOGICAL REACTIONS.

To the Editor of THE LANCET.

SIR,—I read with keen interest the account of Dr. H. Warren Crowe's investigations concerning meningococci, detailed in THE LANCET of Nov. 20th, 1915, more particularly that portion dealing with the identification of this organism, by means of an agglutination test, consisting practically of the observation of phagocytic mixtures, spread on films according to the technique evolved by Sir Almroth Wright. In all essentials this was the method adopted by me for the biological classification of pneumococci [1] in 1913.

The purpose of this short note is to point out two facts brought to light by further experience: 1. In some instances a fairly thick emulsion of cocci as ordinarily used afforded no agglutination with the homologous serum of an immunised animal, whereas the same emulsion diluted 1 in 3 with normal saline gave a complete picture of agglutination. 2. In certain other instances no agglutination appeared when one volume each of serum, corpuscles, and emulsion were used, but if two, three, or four volumes of serum replaced the one volume agglutination was complete, whereas the same alteration applied to the control serum on no occasion produced agglutination. Although these facts relate to pneumococci, there is some likelihood of their being applicable to meningococci. By taking advantage of these facts I have been able to place in their correct class some pneumococci that would otherwise have escaped recognition, and by so doing have given rise to apparently anomalous results.

In so far as pneumococci are concerned, subsequent work on the same lines (in the course of which I have examined several thousands of spread films, prepared for this purpose alone) has in all respects confirmed my original findings.

I am, Sir, yours faithfully,

Florida, Transvaal, South Africa, Dec. 14th, 1915. F. S. LISTER.

HYPERTHYROIDISM AS A CAUSE OF IRRITABLE HEART IN SOLDIERS.

To the Editor of THE LANCET.

SIR,—I have read with much interest the note upon the above subject by Dr. Percival White and Dr. F. Hernaman-Johnson in THE LANCET of Jan. 8th. There is no mention in their paper of the extent of the area of cardiac dullness nor of the state of the blood pressure in their cases. I have had under my care several cases of irritable irregular hearts due to anxiety and over-strain in officers, and I have in most cases found that there was some increase in the area of cardiac dullness, especially towards the right side, and some rise of blood pressure. The irregularity of the cardiac beat has always been due to one of two causes, either auricular or ventricular premature contraction. In the cases that have come before my notice I have not found any enlargement of the thyroid gland although I have looked for it in each case; it

[1] Specific Serological Reactions with Pneumococci from Different Sources, South African Institute for Medical Research, Dec. 22nd, 1913.

is, therefore, evident that this gland is not always at fault in cases of irritable heart in soldiers.

In the cases I have seen the symptoms have been due to a weakened, dilated myocardium, a raised blood pressure, and a general nervous debility. I have found that the administration of bromide of potassium and digitalis, combined with a quiet life, a little daily exercise, regular hours, and a course of Nauheim baths, is the best treatment. The heart is soon quietened down to a normal rate, the blood pressure falls, the area of cardiac dullness is reduced to normal, and the cardiac irregularity is the last symptom to disappear, though this may continue for a considerable time. In some cases compound lymphoid capsules are very helpful as a tonic. I find these cases do not do well if kept in bed for more than a few days at the commencement of the treatment, and there is no doubt that moderate exercise is helpful. In all the cases I have seen there has been some previous history that points to "heart strain" or a "weak heart" in earlier days, and I am inclined to believe that this condition is extremely uncommon in men who have sound hearts to begin with. The object of this letter is to draw attention to the importance of the estimation of the cardiac dullness and blood pressure in these cases.

I am, Sir, yours faithfully,

LESLIE THORNE THORNE.

Harley-street, W., Jan. 8th, 1916.

FUNCTIONAL NERVOUS DISEASE.

To the Editor of THE LANCET.

SIR,—In Dr. D. Forsyth's address on this subject, published in THE LANCET on Dec. 25th, 1915, occurs the following passage: "The neurasthenia of civil practice—i.e., the nervous exhaustion characterised by lassitude and emotional depression, sensations of spinal irritation, pressure on the head, flatulence, dyspepsia, &c.—*which is known to be the specific result of excessive onanism.*" The passage I have italicised is quite unjustifiable, and is a cruel calumny upon a class of very unfortunate persons. What sensations of spinal irritation may be I do not know, but the other symptoms enumerated are, with the exception of lassitude, not characteristic of neurasthenia, though, of course, they may accompany neurasthenia, as they may accompany any other disease. It happens, Sir, that you have in your hands, awaiting publication, a paper of mine referring to the fact that the causation of nervous disease by onanism was exploded at least a quarter of a century ago. It is as destitute of proof as any of the doctrines of astrology, phrenology, or humoral pathology. It is never safe to assume that a doctrine, however completely discredited, has no adherents. When I gave, two years ago, my lectures on astrology in medicine, I assumed that astrology was utterly extinct and had no living adherents; but I was astonished to find that it still survives in a little coterie of persons who cultivate the mummeries of triplicities, houses of heaven, horoscopes, and the rest of the nonsense. I ought not therefore to be surprised to find that the onanistic origin of disease is still believed in, even by a doctor of medicine and of science in the University of London and a Fellow of the College of Physicians. Was not Peter Woulfe, F.R.C.P., a convinced astrologer as late as the early years of the last century? He was a hundred years behind his age, and Dr. Forsyth is belated by only a quarter or a third of that time. That onanism may be discovered among the antecedents of some cases of neurasthenia I am not concerned to deny. It may be discovered among the antecedents of some cases of every disease in the male, and it may be discovered among the antecedents of many cases of robust health also; but in many cases of neurasthenia there is no such antecedent, and when it can be found as an antecedent there is no reason to suppose that it is a cause. Such a belief is on a par with the belief of gardeners that canker in fruit-trees is due to sourness in the subsoil. There is no evidence that the subsoil is sour, or, if it were, that the sourness could produce canker.

There is another passage that calls for comment in Dr. Forsyth's address. "One patient who had broken down under shell-fire proved on analysis to be a case of unconscious homosexuality with marked anal eroticism." Unconscious pain, unconscious homosexuality, unconscious Œdipus complex, and other unconscious states of consciousness of the psycho-analysts, meaningless self-contradictions as they are, were a great puzzle to me until I learnt from one of their victims what these expressions mean. This poor man had suffered many things for many months from many psycho-analysts, until at last he turned upon his tormentors, so he informed me, with these words: "It is true," said he, "that I now have these filthy thoughts, *but it is you that have put them into my mind.*" This, I take it, is what the psycho-analysts mean when they say, "it was proved to be a case of unconscious homosexuality," or unconscious Œdipus complex, or what not. They mean a filthy thought which the patient will not own to. He will not own to it because he does not possess it until it is instilled into his mind by the insidious suggestions of the psycho-analyst.

I know that Œdipus complex. It comes from Vienna. I have met with it myself—in patients who have been subjected to psycho-analysis. A short time ago I was consulted by a patient, a feeble creature, suffering from mild neurasthenic depression, which cleared up in a month. He had been psycho-analysed for nine months, and the only alteration the treatment had effected was to make him believe that he, a man of 50, cherished an incestuous passion for his father, a man of more than 80 years of age! I found it much more easy to persuade him that his supposed passion was all tommy-rot than his previous advisers had found it to persuade him it was genuine. After a couple of short interviews it disappeared, whereas to instil it had taken many months of assiduous suggestion, poured into his mind for several hours three or four days a week by the combined efforts of several accomplished psycho-anal-ists.

I am, Sir, yours faithfully,

Jan. 1st, 1916. CHAS. A. MERCIER.

MIDWIVES' GRIEVANCES.

To the Editor of THE LANCET.

SIR,—As medical officer of health of a metropolitan borough council, I read the letter of your correspondent "Fair Play" with regard to the above subject in THE LANCET of Jan. 1st, with considerable interest. Your annotation on the Supervision of the Practice of Midwives in the same issue also interested me. In both efforts the portions relating to the exercise of control over lying-in homes appealed to me most. I have heard some talk of the advantages that might accrue to expectant mothers if they were seen from time to time during the period of expectancy by someone working under the medical officer of

health and capable of giving simple instructions with regard to hygiene and hints as to signs indicating that the advice of a medical practitioner was necessary. I was unaware that, in the elegant phrase of "Fair Play" there had been an attempt "to bluff midwives into thinking that this notification is obligatory." In my own district there has certainly been no such attempt, though I might mention that for years it has been the practice of the staffs of two great hospitals to issue lists of expectant mothers to the local health society coöperating with the medical officer of health's department, in order that the women might be kept under friendly observation and advised and helped in any way possible. No pressure whatever was brought to bear upon either the authorities or the staffs of the hospitals to supply the information; no pressure has been brought to bear on the midwives to do so. The relations between the women who practise midwifery in this borough and the department of the medical officer of health, always most friendly, were never more friendly than at present. Some of those whom I visited recently expressed themselves as most willing to work with the public health department and as gratified at the readiness with which assistance was rendered them by the women attached to that department. I have heard nothing of the clamour which "Fair Play" states has arisen over this matter of notification, and am inclined to think that both he and the writer of your annotation are unnecessarily perturbed.

In dealing with the matter of control over lying-in homes "Fair Play," which appears to me, by the way, a singularly appropriate pseudonym, is at his best. He pities the poor midwife who may suffer loss of status because "she comes, along with nuisances and eating houses, under the jurisdiction of the sanitary inspector." He rejoices because she is to be looked after by the Public Control Department of the London County Council, which is under the direction of a layman and exercises such important duties as the inspection of petrol stores and smoky chimneys. Obviously, "Fair Play" is one of those referred to in your annotation as "best acquainted with the work done by the London County Council and the metropolitan borough councils" (without capitals), and is convinced of the suitability of the former body for carrying out such duties as require the exercise of firmness and discretion. Probably, also, he is convinced that the London County Council (with capitals) is the one body of all others in London "best qualified as a central authority to perform the task (of supervising lying-in homes) with economy, without sacrificing efficiency." As a profound student of the works of the London County Council he knows, of course, as the writer of your note knows, how efficiently and economically that body runs such matters as school medical inspection; how they insist upon saving everywhere, but particularly in connexion with public health work, by refusing to countenance overlapping or to provide machinery and appoint new officers to do work which is already being done or could readily be undertaken by the metropolitan borough councils. Knowing these things, "Fair Play" and the annotator, of course, know that the one reason why the borough councils urge the London County Council to accept the advice of the Committee of the House of Lords to delegate to them the bulk of the duties in connexion with the supervision of lying-in-homes is that they could be more economically performed. They probably know that the borough councils arrived at the conclusion that they could do the work more cheaply because they already had workers whose duties brought them in contact with midwives and women and children, and who were capable of undertaking the extra work without additional expense. They know that the London County Council stated before the Committee that it would be necessary for them to make additional appointments and pay extra salaries in order to do the work. They know that the borough councils showed that, their officers being on the spot and knowing their districts were in a better position to supervise than others appointed by the London County Council, who could not possibly know all London and would have to spend a great amount of time in travelling. They know that the chairman of the House of Lords Committee was greatly impressed by the evidence brought forward by the borough councils and would, but for the delay that might arise in putting in operation certain clauses in the Bill relating to massage establishments, have decided against the London County Council.

"Fair Play" being so well informed, as his talk of nuisances and eating-houses and supervision of midwives by sanitary inspectors lead one to believe, and the writer of your note being of the elect who are aware of the tremendous superiority of the London County Council over the borough councils, know these facts that I have given quite well. This letter, so far as they are concerned, is therefore unnecessary; it is written entirely for the benefit of those who do not know them, and might fail to obtain an inkling of their existence from "Fair Play's" exceedingly plain statement, and from the note which is so frankly unbiassed and free from all partisanship.—I am, Sir, yours faithfully,

CHARLES PORTER,
Medical Officer of Health, Metropolitan Borough of St. Marylebone.

Jan. 4th, 1916.

*** Despite Dr. Porter's strictures, we find that the views expressed in our annotation remain substantially our views. Perhaps his acquaintance with the admirable conditions prevailing in Marylebone may have misled him into assuming that these conditions are general. With regard to "Fair Play's" letter, we presume that the point which it was desired to bring out was the fact that the feeling of midwives generally is strongly against any attempt to make notification of pregnancy obligatory. Would Dr. Porter suggest that the midwives should take any other view? Does he wish to imply that the medical man in an analogous position would take any other view?—ED. L.

BILHARZIOSIS.

To the Editor of THE LANCET.

SIR,—I watched 20 cases of bilharziosis at the time of the Boer War while I was acting pathologist at the Princess Louise Hospital. The patients were principally from the Argyle Regiment and had been in the Rustenburg district of South Africa. Their stay in hospital lasted a few months, when they were all suddenly invalided out of the service. None of them was cured while in hospital, although some improved and ova were found in the urine with difficulty. The worm itself was not discovered in any of the subjects under observation. The principal clinical features were loss of energy, pallor, emaciation, and bladder symptoms. The amount of the blood in the urine varied. In some the bulk of the urine was bright red; in others it was cloudy and flocculent; while in several only a slight blood precipitate was noticeable, the supernatant urine being clear. In all the specimens of urine

examined microscopically abundant ova with terminal spines were present. Lateral-spined ova were never noticed. The fæces were not examined microscopically. Urinary sedatives, methylene blue, male fern, iron, and other routine drugs were given, and saline injections per rectum. In one case lavage of the bladder with quinine solution appeared decidedly beneficial. But these careful observations of 20 cases of unique clinical interest were unfortunately cut short as the patients left the hospital for their own homes in Scotland. The aquarium which I was constructing to contain snails and small fry had also to be abandoned since my supply of embryos had ceased. How these cases terminated I am still at a loss to know.

I am, Sir, yours faithfully,

Bournemouth. JOHN FREDK. BRISCOE.

THE MEASUREMENT OF BLOOD PRESSURE.

To the Editor of THE LANCET.

SIR,—Being much interested in blood pressure measurements and their clinical significance, I read with considerable interest the editorial article on the subject in your issue of Jan. 8th. I am very much astonished to find no mention of diastolic or pulse pressure therein. Surely the *pulse* pressure is the important information, not merely the maximum systolic pressure? For instance, systolic pressure may in two cases, A and B, be 180 mm. Hg, but in A diastolic is 80 mm., and in B 140 mm. A is probably an "aortic regurgitation," while B probably has some renal trouble ± arteriosclerosis. How is the *systolic* pressure going to help us if we do not take the diastolic too?

Also, venous pressure should prove valuable when properly worked out and tested against clinical and post-mortem and operative findings.

I am, Sir, yours faithfully,

H. GEORGE P. CASTELLAIN, M.A., M.D.

St. Mary's Hospital, Paddington, W., Jan. 7th, 1916.

*** We quite agree as to the importance of diastolic pressure as a guide to the pulse pressure, but it is clearly impossible to discuss all the aspects of blood pressure within the limits of one article. Unfortunately, there is not a consensus of opinion as to an accurate and convenient way of estimating diastolic pressure. Even the elaborate apparatus of Pachon, according to one observer who has devoted much attention to the subject, does not give an accurate reading of diastolic pressure. Our article was confined deliberately to the consideration of the less controversial aspects of the subject.—ED. L.

THE SUPPLY OF MEDICAL MEN FOR THE ARMY.

To the Editor of THE LANCET.

SIR,—The leading article on this subject in your issue of Jan. 1st provides much food for thought. The process of obtaining the necessary men has so far been too much of a happy-go-lucky character. The army authorities ought by now to be able to say we want so many men, and further they should be able to say we want so many men of a certain age and experience for: (1) our first line; (2) our dressing stations (dug-outs); (3) our field clearing stations; (4) our field base hospitals, &c. The authorities should have a kind of stocktaking, fully organise what they have got, and return to civil practice men they cannot readily fit into their scheme.

So far for the army. Now for civil work. Surely nothing can be done unless pretty drastic organisation is carried on here too. The whole profession should be enrolled for the country's service for the duration of the war. Certain measures should be adopted in order to ensure fair play all round.

1. Suspension of the panel part of the Insurance Act. It is unreasonable that whatever the shortage of doctors, the insured class alone should have medical attention guaranteed them under strict legal bonds.

2. No doctor should be allowed to remain in his old locality. It would be unfair that one man should have the opportunity to gain all the best patients of his absent colleagues.

3. The public for the duration of the war must give up free choice of doctor. It is absurd that three or four medical men should go in three or four separate motor cars to attend half a dozen patients in a village, three or four miles distant, of, say, a couple of hundred inhabitants.

4. After the war no doctor shall be allowed to settle in his new locality.

5. So far as possible, all the new-fangled school appointments, those medical officerships of health, held by general practitioners with no public health diplomas or knowledge of the subject, to the detriment of their fellows, and the doubtful good to the public, should be suspended. The moneys accruing from the salaries of these appointments, together with the panel money, parish doctors' salaries, &c., would go towards the lessening of the Health Tax imposed to pay for the doctoring.

6. So far as possible men should be paid in proportion to the incomes they were earning before the war.

Under efficient organisation many men could be spared for the army, others used to operating in the smaller provincial hospitals could be spared to go as house surgeons and assistant surgeons at the big hospitals, one operating surgeon could be allotted to each small provincial hospital, and operations restricted to urgent cases only.

7. Lastly, the organisation of the profession should be taken out of the hands of the profession. The experience of the Insurance Act showed that the profession has no business instincts, can *talk* till the crack of doom, but *do* nothing. Find a Lord Derby, let him hatch a scheme, and give him full power to carry it out.

Valuable time has already been wasted, and "Too late" is pretty certain to be written over the medical arrangements of the new armies.

I am, Sir, yours faithfully,

Jan. 3rd, 1916. A GENERAL PRACTITIONER.

GERMAN MEASLES.

To the Editor of THE LANCET.

SIR,—I have seen some letters in THE LANCET lately suggesting that the name "German measles" should be given up. May I ask whether the people who suggest that would also suggest that the term "cousin german" should be abolished? I take it that in both cases the word German means "akin to." A better way to solve the problem, it seems to me, is to go back to the old spelling of the word and write germane measles, or perhaps measles germane, and in pronouncing the word make the *a* long as it is in the word germane when it is used in such a phrase as "the matter was germane to."

I am, Sir, yours faithfully,

M.D.

*** Our correspondent's suggestion is entitled to respect. But we can find no authority for any other meaning of German in this connexion than the topographical one. Murray gives as alternatives formerly in use: "False, French, or hybrid measles."—ED. L.

Obituary.

SIR FREDERIC WILLIAM HEWITT, M.V.O., M.D. CANTAB., M.R.C.S.,

ANÆSTHETIST TO THE KING; PHYSICIAN ANÆSTHETIST TO ST. GEORGE'S HOSPITAL; CONSULTING ANÆSTHETIST TO THE LONDON HOSPITAL.

WE much regret to announce the death of Sir Frederic William Hewitt, anæsthetist to the King and physician anæsthetist to St. George's Hospital, which occurred on Jan. 6th at Brighton.

Frederic William Hewitt was born in 1857, the son of a Wiltshire gentleman, and was educated at the Merchant Taylors' School and at Christ's College, Cambridge, where he held a scholarship in natural science. From Cambridge he went to St. George's Hospital, where he made his mark while still on the junior staff as a man with a remarkable all-round knowledge of clinical medicine. For a time he was a popular coach for the final examinations for medicine at the various universities, and rather to the surprise of his friends he decided to adopt the administration of anæsthetics as a specialty, inasmuch as his wide range of equipment seemed to mark him out for early success as a physician and for prompt election to hospital appointments. Hewitt, however, had planned his career with characteristic simplicity and determination, as Mr. Marmaduke Sheild shows in the personal testimony which follows.

As an anæsthetist Hewitt was well known throughout the world, and fairly to review his work requires that we should look at it from several different aspects. He must be regarded not only as a teacher and demonstrator of the art of giving anæsthetics, but as an experimenter who was constantly endeavouring to improve and to widen the scope of his art, and also as an apostle who preached both to his own profession and to the general public the necessity for devoting to this branch of medicine that attention and respect which its importance demands in relation to the saving of human lives. From whichever of these aspects we examine Hewitt's work we shall find that it was always distinguished by the same fervent care in detail, the same enthusiastic perseverance, and almost the same wide success. As a practical anæsthetist, indeed, his position may well be said to have been unrivalled by any of his contemporaries, to such an extent did he acquire the confidence of the surgical and dental branches of his profession as well as that of the general public. To the latter he was not known solely because of his association with the case of King Edward VII., although this, of course, lent a unique distinction to his position; but apart from this his name was familiar as has been the name of hardly any other anæsthetist because of his constant exertions by word of mouth and by pen to further the interests of the branch of practice in which he was engaged. The care in detail to which we have referred was perhaps the most distinguishing feature of his practical work as an anæsthetist, just as it was of all his writings upon anæsthetics. It was this great attention to detail, combined with a natural inventiveness, that led him to the many useful little contrivances—gags, props, airways, &c.—which he introduced and which have almost without exception proved themselves of permanent advantage to administrators of anæsthetics. By this same elaboration of detail he arrived in his earlier years at a perfection of apparatus for the combined administration of nitrous oxide and oxygen which enabled him to carry to a practical and eminently advantageous conclusion the experimental work of Paul Bert, which he had studied, imitated, and amplified. Perhaps nothing that he has left to anæsthetists is of greater value than the record of his work in this direction, the clear principles which it led him to enunciate, and the excellent apparatus in which it eventually resulted.

Again, it is to the extreme care expended upon detail, as well as to a natural clearness of expression and to an instinct for what is of practical value, that Hewitt's well-known book owes its great worth, and it is characteristic of its author that the first edition of that book was the outcome of ten years' patient note-taking. To few authors is the advice "verify your references" so unnecessary as it was to Hewitt, and to help him in any literary work was an educative process as regards conscientiousness and the careful scientific weighing of facts before expressing opinions upon them. The constancy of effort which Hewitt displayed can only result from an enthusiastically held conviction. Such a conviction did indeed inspire him, and it is easy to see from all his work what that conviction was. He was convinced that the study and practice of anæsthetics were worthy of much greater attention than was being bestowed upon them. It was no small satisfaction in his later years to see that this reproach could no longer be so widely applied to the medical profession; and, though he never alluded to his own efforts as a cause, it was largely through him that an increasing number of medical men of high educational standard came to devote themselves to the study and practice of anæsthesia. It was largely owing to Hewitt that though in 1907 out of 22 examining bodies which granted degrees or diplomas in medicine only eight insisted on any evidence of instruction in anæsthetics, yet by 1911 the General Medical Council were able to state that nearly every such body in Great Britain now included evidence of this instruction in their requirements of candidates.

The untiring energy and perseverance with which Hewitt pursued his object of "improving the conditions under which anæsthetics are administered and of protecting the public against the employment of anæsthetics by unqualified persons" is well illustrated by the history of the movement which he inaugurated towards improved legislation. The British Association, the Medico-Legal Society, the Royal Society of Medicine, the General Medical Council, and the Council of the Royal College of Surgeons of England are only some of the bodies, at first indifferent to his views, which Hewitt won over to active aid in their promotion, until eventually, with the help of a Home Office Department Committee and an enlightened Home Secretary, an actual Bill was drafted and promised Parliamentary support. Nor can it be doubted that the legislation which he so much desired would have come to pass after the wider issues, National Insurance, Home Rule, and finally international war, which temporarily swamped its chances, had passed away and left him free to insist again. One of the main reasons for Hewitt's anxiety for reform was, as he stated, his inability to assent to the proposition that the great majority of deaths under anæsthetics are unavoidable. His experience leading him to the opposite conclusion, he urged the necessity for

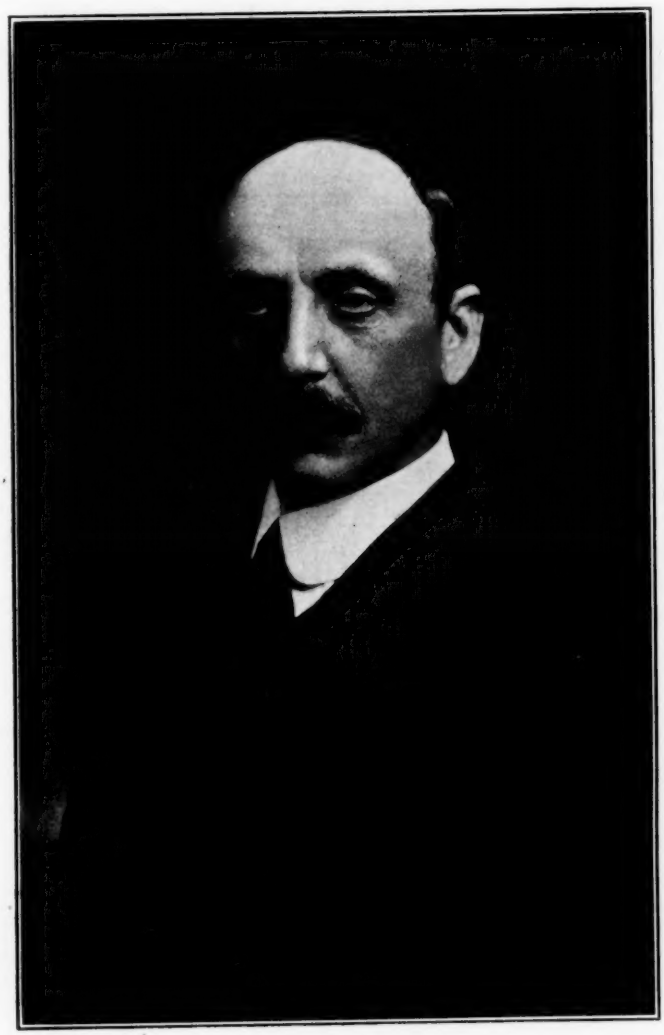
paying much greater attention to the personal factor in anæsthetisation as "the key to the problem of death prevention." These are Hewitt's words, which should live constantly in the mind of every anæsthetist.

Mr. Marmaduke Sheild, one of Sir Frederic Hewitt's oldest personal friends, writes the following eloquent appreciation: "It was my privilege to be on terms of intimacy with the late Sir Frederic Hewitt, and to be associated closely with him in surgical work for over 20 years. We commenced our professional career together in chambers in Somerset-street, and there maintained a precarious existence eked out by the taking of pupils, and encouraged by the reflection that these unpretentious quarters had sustained the weighty presence of the late Milner Fothergill, and the early scientific investigations of Sir Lauder Brunton. Hewitt had a distinguished career at Cambridge and St. George's Hospital. As house physician his knowledge was remarkable, and for many years a number of pupils, now distinguished practitioners, repaired to him for preparation for the university degrees in medicine. He was a clear exponent, and laborious and painstaking as a teacher, and carried these qualities into his future practice in anæsthetics, with remarkable success. There can be no doubt he would have achieved wide success as a physician. To great natural ability he added kindliness, and a striking personality lay behind his unassuming manner. He was accurate and painstaking in all his work, as I was well able to appreciate in the preparation of papers which we jointly produced. To this was added an indomitable perseverance and capability for work and prolonged strenuous effort.

Hewitt was confronted, like many young men in London devoid of private means, with the necessity of making money early. He felt unable to face the long and dreary period of gratuitous work and impecuniosity that usually clogs the steps of young consultants who maintain the paths of professional integrity while hoping ultimately to gain the golden fleece of success. But there was another reason, a secret known only perhaps to myself, which I deem it right to now divulge, for it shows the indomitable spirit of the man to overcome obstacles which would have daunted many. Hewitt, shortly after leaving Cambridge, was suddenly affected with alarming defects of vision due to obscure and irremediable retinal disease. He was forbidden to use his eyes for reading or close work. And it is hardly to be credited that much of his subsequent work—the preparation of papers and the writing of his important book on anæsthetics—was done by the aid of readers and an amanuensis. So what was lost to medicine was gained by the science and art of anæsthetics. There can be no doubt that the great advance in the general knowledge of this most important branch of the duties of every practitioner is largely due to the teachings and writings and indefatigable work of the late Sir Frederic Hewitt. Thirty or forty years ago anæsthetics were given in a very haphazard fashion. One school gave chloroform, another ether, a third mixtures of various agents. Too often the administration of ether resolved itself into a trial of physical strength between the patient and the administrator. Hewitt very early saw the importance of selecting the anæsthetic to suit the requirements of each individual case, especially basing his selection, not only on the requirements of the surgeon, but on an elaborate medical examination of the patient. His vast experience as an administrator at several of the leading London hospitals enabled him to decide swiftly what was the safest method to pursue in the most difficult and dangerous cases. He also initiated the wise plan of consultations between the operator and anæsthetist in any case of peculiar danger and difficulty. His skill was very remarkable; in operations on the mouth and air-passages attended with hæmorrhage there was no one in whose hands a patient was so safe.

Hewitt possessed the quality of supreme self-control. Naturally a nervous and sensitive man, he became as steel when confronted with dangers and unforeseen emergencies. In one of his earlier cases a patient of some importance was suddenly affected with that rare complication—persistent spasm of the glottis after gas administration, and apparently became lifeless in the dental chair. Hewitt opened the trachea with an ordinary penknife and held the wound open until a tube was introduced and the patient's life saved. The late Sir James Paget, who afterwards saw the patient with me, remarked that Hewitt's was one of the most courageous acts he had ever known. Another leading feature of Hewitt's character was the ready assumption of responsibilities which would have daunted a man of less sense of duty and courage. I remember his display of this quality in several instances. In a case of aneurysm by anastomosis of the palate and severe hæmorrhage several men of experience in London declined the responsibility of administering anæsthetics. Hewitt advised the performance of tracheotomy and plugging the upper air-passages with a sponge. Chloroform was safely and easily given through the tube and the removal of the disease by excision accomplished. So when the supreme responsibility of his life, the greatest responsibility any man could have been called upon to face, was laid upon him, he was ready to bear it. Many years have not passed since the whole nation was hushed and awe-stricken at the serious illness of the man whose life was the most precious in this great Empire, and whose death might change the whole civilised world. The profession felt that the illustrious patient could not be in better hands surgically, and no one was more fitted to undertake the anxious duty of anæsthetist than Hewitt. After the operation upon King Edward Hewitt's practice greatly increased; he gave anæsthetics to other members of the Royal Family, and was frequently selected by surgeons as the administrator of anæsthetics for persons of eminence, especially when they were seriously ill, suffering from pulmonary or cardiac complications. His responsibilities also correspondingly increased, and after a time began to weigh upon him. It was obvious to his more intimate friends that he was overtaxing his strength, and no doubt the life of a great anæsthetist, full of anxieties, exposed to close atmosphere, the fumes of drugs, and the emanations of disease, is only one to be endured and maintained by one of great physical endurance. Hewitt was in early life a good oar, and had been something of an athlete, as well as a fine football player, and his early training stood him in good stead.

In private life he was a delightful companion. He was an excellent conversationalist and full of common-sense and observation. He was a warm and constant friend. In all his professional differences with others he always bore himself with courtesy and moderation. His circle of friends and acquaintances was a large one and he was hospitable and kind, especially to younger men.



[*Photograph by Messrs. Elliott and Fry.*

SIR FREDERIC WILLIAM HEWITT, M.V.O., M.D.CANTAB.,

ANÆSTHETIST TO H.M. THE KING; PHYSICIAN ANÆSTHETIST TO ST. GEORGE'S HOSPITAL; CONSULTING ANÆSTHETIST TO THE LONDON HOSPITAL.

His home life was a happy one. We may well wonder at the irony of fate that has cut off too early a life so useful to the world. I am able to state that he bore the long and cruel sufferings of an inveterate, progressive, and insidious malady with the same fortitude with which he faced his earlier professional struggles. As we mortals define success, it came to Hewitt. Eminence in his profession; few enemies and a host of warm and admiring friends; happiness in his home; a sense of duty done; and a life most nobly spent. His contemporaries, alas, are fast disappearing, but amongst those of us who are left the memory of Frederic Hewitt will never fade."

Mr. Sheild's tribute to Sir Frederic Hewitt calls for no addition save the bare dates of Hewitt's appointments and honours. He graduated in medicine at Cambridge in 1883, proceeding to the doctorate in 1886. He was elected anæsthetist to the Charing Cross Hospital in 1884, and held the post for 14 years synchronously with appointments at the Royal Dental Hospital and the London Hospital. He was elected anæsthetist to the former institution in 1885, and retired in 1901, and to the London Hospital in 1886, where he was consulting anæsthetist at the time of his death. He returned to St. George's Hospital as physician anæsthetist in 1902. He was appointed to the Victorian Order in 1902, and received the honour of knighthood in 1911.

His family life was a singularly happy one. He leaves two daughters and a son, a schoolboy at Eton, to mourn their loss.

DR. THEODOR LANGHANS.

WITH Langhans has passed away one whose name may not unsuitably be identified with the progress of pathology in the last half-century. At first assistant to the anatomist Henle of Göttingen, he studied under Virchow and Traube in Berlin and then became Recklinghausen's assistant in the pathological institute at Würzburg. He occupied the chair of morbid anatomy at Giessen for a few months, and was then called to succeed Klebs in Berne, where his life-work was performed and he remained until ill-health obliged him to relinquish the professorship which he had held continuously for 51 years. Here he was the senior member of a trio who made the Berne medical school famous the world over, and of whom Kocher and Sahli are still living.

The name of Langhans is familiar to all from his description in 1868 of the giant cell as an almost constant element in the structure of the tubercle, and the value of this discovery is not diminished by the fact that such cells have since been found in association with processes that are not tuberculous. He made two large contributions to the study of nephritis which paved the way to the understanding of the functions of the glomeruli and the meaning of the early morbid processes observed in them. Another important work was on the chorionic layer of the placenta. In his later years he was chiefly occupied with the pathological anatomy of goitre and of cretinism, and in 1892 he described changes in the peripheral nerves which he had found in cases of cachexia strumipriva. Langhans's idea of comparing the thyroid glands in a goitrous district with those of a goitre-free one was fruitful in enabling his pupils to recognise the earliest beginnings of the process in the form of diffuse epithelial proliferation in apparently normal glands.

Of the regard felt towards him by his pupils, one of them who now occupies the chair of pathology at another Swiss university testifies: "As a lecturer Langhans was not merely reverenced for his learning but was always beloved by his pupils, to whom, by his simple and clear style, his great learning, and his encouragement to exact observation, he gave a priceless preparation for their careers in after-life. To his assistants and colleagues he was a much-honoured master whose confidence and friendship were things to be eagerly sought after and, when obtained, to be deeply valued. He possessed all the qualities of a successful research student—a wonderful gift of observation, a clear intellect, and a never-flagging interest for even the minutest and apparently least important details; and, lastly, he practised a rigid criticism of his own work, so that it rarely happened that any of it was corrected by later experience, and thus, in spite of his extremely modest and retiring nature, his judgment was valued everywhere."

MALACHIA DE CRISTOFORIS, M.D. PAVIA.

THE Third Italy owes much to her medical patriots from the dark days of her subservience to Austria, all through the campaigns of 1848, 1859, 1860, 1866, and 1870 up to the present when, as the youngest member of the Quadruple Alliance, she is rounding off her north-eastern frontier and aiding the good cause by keeping Austria in play by land and sea. Next to Agostino Bertani, the surgeon-in-chief of Garibaldi's expeditions, who "sacrificed to the Revolution one of the finest medical intellects of the nineteenth century" and who, shortly before his death, bequeathed to his country her great "Codice Sanitario," no name stands out more honourably than that of the great Milanese physician and sanitary reformer, Malachia De Cristoforis, who recently closed his 80 years of strenuous life.

The youngest of three or four brothers, he was a child when he fought in the memorable "Five Days" and had already received his "baptism of fire" when he matriculated at the University of Pavia as a student of medicine. In 1854, as an undergraduate, he volunteered his services in the terrible cholera visitation, and evinced a quite unique talent in improvising and administering ambulances in the rural districts. In 1856 he took the *summi in medicinâ honores*, and was immersed in clinical observation and research when the masterly diplomacy of Cavour, inspired by "Italy's opportunity in the Eastern Question," absorbed the interest of all young Italians, till, returning with military honours from the Crimea, the Piedmontese army found a wider field of conflict by the side of the Emperor Napoleon in the expulsion of Austria from Lombardy. In 1859 young De Cristoforis fought in the "Cacciatori delle Alpi," a Garibaldian Corps, and acquitted himself nobly, till, in the following year, his conduct under fire was so conspicuous that he earned not only the special commendation of Garibaldi, but that of King Victor Emmanuel, receiving the silver medal for "military valour" and also the martial Cross of Savoy. In 1866, Venetia being by this time reclaimed to the motherland, he resumed his clinical studies in the Milanese Ospedale Maggiore, making gynæcology his specialty and steadily rising in professional acceptance till he was promoted "primario" on the clinical staff. He was now an authority and

a widely employed consultant in obstetrics, making digressions into other fields of the profession, and contributing original methods to surgical practice—the treatment of aneurysm by electro-puncture among them—while starting and supporting journals, national and local, for the diffusion of medicine as a science and as an art. Public hygiene was another arm of the profession to which he gave a powerful impetus, and he was among the earliest champions of cremation and of the crusade against alcoholism. The lesions and maladies incurred in the factory and the climatic treatment of infantile or juvenile diseases were further directions in which he laboured assiduously.

A sociologist in the widest sense, Cristoforis took an active part in reforms, municipal and national, and was promoted to a seat in the Upper Chamber in consideration of his work in this field. Naturally enough, he came frequently into collision with interests vested and political, but his austere sense of justice kept him immune from party spirit. As has well been said of him, he had "many opponents but not a single enemy." And so passes into the domain of history another of Italy's "worthies," bequeathing not only salutary reforms and innovations in professional and civic life, but also an example of self-sacrifice and probity of which his native Milan has just shown its appreciation in a public funeral.

ALBERT WESTLAND, M.A., M.D., C.M. ABERD., J.P.—The death took place at his residence, on Dec. 31st, 1915, of Dr. Albert Westland, a well-known public man in Aberdeen, at the age of 62. He was the son of the late Mr. James W. Westland, manager of the North of Scotland Bank in Aberdeen, and a brother of Sir James Westland, C.S.I., who had a distinguished career in the Indian Civil Service. Graduating in arts at Aberdeen University in 1872, and in medicine, with highest honours, in 1875, he was awarded the John Murray medal and scholarship. During the years between 1876 and 1898 he was engaged in general practice in London, being for over 20 years in partnership with Dr. Ford Anderson at Hampstead. After his retirement from practice Dr. Westland settled in Aberdeen. Although for some years past Dr. Westland had not taken an active part in public life, he was deeply interested in everything pertaining to the welfare of the community. He was for some time a member of the Aberdeen town council and of the Aberdeen parish council, and at the time of his death a member of the Aberdeen University Court, elected by the General Council, taking the keenest interest in the affairs of the University. For some time he was president of the Aberdeen Liberal Association, but resigned this position on account of the Government's attitude to the medical profession in connexion with the Insurance Act. In all his public work Dr. Westland showed an honesty of purpose and fairness of mind which disarmed opposition. He is survived by a widow and two daughters.

JOHN MAXWELL TRIMBLE, M.D., M.Ch.Q.U.I., M.R.C.P.Irel., J.P.—The death of Dr. J. M. Trimble, of Strabane, Co. Tyrone, took place on Jan. 7th. Up to a short time before his death he was attending to his work, and although he was known to be ailing the end was sudden. Studying in Belfast, Dr. Trimble graduated M.D. of the old Queen's University in 1881, and in 1883 he became a Member of the Royal College of Physicians of Ireland. Shortly after qualifying he was appointed dispensary doctor of Strabane, an appointment he held for about 30 years, resigning it only a short time ago. He was medical officer of health of the town of Strabane, and recruiting medical officer of the 8th Battalion of the celebrated Inniskilling Fusiliers, as well as J.P. for the county of Tyrone. Dr. Trimble enjoyed an extensive practice and was greatly liked by his patients, especially by the poor. Sincere sympathy is felt for his widow and surviving relatives.

The War.

THE CASUALTY LIST.

THE following names of medical men appear among the casualties announced since our last issue:—

Died.

Captain W. E. Rielly, R.A.M.C., attached to the 3rd Battalion London Regiment (T.F.), graduated M.R.C.S., L.R.C.P. Lond. in 1891, and later took the M.B. Durh. and the D.P.H. at Cambridge, and was a house physician at the Brompton Hospital.

Died of Wounds.

Lieutenant W. W. Deans, R.A.M.C., graduated L.R.C.P., L.R.C.S. Edin. in 1901.

Wounded.

Lieutenant G. A. Birnie, R.A.M.C., attached to the 5th Battalion Northumberland Fusiliers.

Lieutenant L. A. C. Panton, R.A.M.C. (Captain Canadian A.M.C.).

Captain R. E. Walker, R.A.M.C., attached to the 2nd Battalion Durham Light Infantry.

Lieutenant M. A. Swan, R.A.M.C., attached to the Royal Field Artillery.

THE HONOURS LIST.

The following medical officer is commended for services in action during the operations against the German possessions in the Western Pacific, 1914:—

Captain Brian Colder Ampill Pockley, Australian Army Medical Corps (killed in action).

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Second Lieutenant C. S. Lee, Royal Engineers, only child of Lieutenant-Colonel W. A. Lee, late of the Indian Medical Service.

Captain M. C. Gribbon, 67th Punjabis, youngest son of the late Lieutenant-Colonel G. C. Gribbon, R.A.M.C.

THE CENTRAL MEDICAL WAR COMMITTEE.

A meeting of the Central Medical War Committee was held on Wednesday, Jan. 12th, at the offices of the British Medical Association, when some interesting developments in the work of the Committee were discussed. In the first place, an apparent misapprehension by the War Office as to the views of the Committee upon the employment of medical men of military age in hospitals at home was cleared up. The real nature of the representations from the Central Medical War Committee is that commissions for home service should not be given to practitioners who are physically fit for foreign service.

A scheme for the formation of a Civil Emergency Corps to meet the exigencies of war conditions in home practice was discussed and, after an interesting debate, was referred to the Executive Subcommittee for further consideration. The scheme involves the organisation of a corps of medical practitioners ready to take emergency duty in any part of the country at short notice, it being recognised that, however carefully graded

the reduction of the number of civil practitioners in each area may be, the home population must now be undergoing some extra risk in the event of serious epidemics. The details of such a scheme were seen to require careful thought. For example, the question of how these emergency duties should be remunerated is not quite easy to answer. Presumably the demand for assistance in any given locality would be from individual practitioners, and this could not be met conveniently by any system of retaining fees to be made by the Local Government Board and the National Health Insurance Commission. These two Government departments would require public grounds for granting money, and probably public channels through which to spend it.

The debate on this subject showed how closely the work of the Committee was now associated with the public work of the Local Government Board and of the National Health Insurance Commission, so that a resolution by which the Committee could keep in close touch with those Departments was seen to be particularly valuable. This resolution was to the effect that representatives of the Local Government Board and of the National Health Insurance Commission should be invited to all meetings of the Central Medical War Committee and of its Executive Subcommittee. It was at the same time decided to cöopt a prominent official connected with a large panel body to the Committee as the best way of obtaining information about the position of general practitioners engaged in industrial practice.

In answer to Mr. Shirley Benn in the House of Commons on Wednesday last, the Under Secretary of State for War, Mr. Tennant, explained the constitution of the Central Medical War Committee, its terms of reference and relations with the War Office.

THE ENROLMENT OF MEDICAL MEN FOR THE R.A.M.C.

The following official communication has been issued by the War Office (Jan. 12th, 1916):—

The Army Council consider that no qualified medical practitioner who is willing to accept (if offered) a commission in the Royal Army Medical Corps should be accepted as an ordinary combatant.

It is understood that the Central Medical War Committee will circularise the profession, stating that any medical practitioner who has enlisted under the group system should immediately enrol himself under the Committee's scheme as willing to accept a commission in the Royal Army Medical Corps if offered him.

To every practitioner who enrols the Committee issues a certificate of enrolment.

Every medical practitioner who has attested and enrolled under the Central Medical War Committee's scheme should, when called up, produce to the recruiting officer his certificate of enrolment. He will then not be posted to a combatant unit, and will await instructions from the Central Medical War Committee.

MEDICAL STUDENTS AND MILITARY SERVICE.

The President of the General Medical Council (Sir Donald MacAlister) has received from the War Office the following intimations relating to medical students:—

I. Students who at or before the close of the present winter session will be qualified for entry to one of the examinations for third-year students in medicine, and duly enter for the examination for which they are studying, will not be attested until after its conclusion, and if they are successful will be included in the class of fourth-year students (under Lord Derby's Scheme).

II. Directions have been sent to all commands in England and Scotland, instructing them to inform military representatives [on recruiting tribunals] that in cases where students attested in Army Reserve, Section B, appeal for their calling-up to be postponed until after they have taken an examination, this request may be granted provided the examination will be held before March 31, 1916.

Sir Donald MacAlister will be grateful if steps are taken by the authorities of each medical school to call attention to these official intimations, which have special reference to students of the first, second, and third years of the professional course.

A REGIMENTAL MEDICAL OFFICER IN GALLIPOLI.

We have received from Lieutenant-Colonel F. E. Fremantle, D.A.D.M.S., the following interesting résumé of his experiences in Gallipoli. When the letter was written it could not be published, but now it has the interest of a historic document:—

We are serving here under conditions a good deal more primitive than in France or even in Serbia; for the only trace of a house within miles is a one-roomed farm of rough stone and clay, of which only a few feet of wall remain; we dig-in wherever we can; and otherwise have only ground-sheets for protection against the rains and gales, which are already fierce enough, although the weather is still fairly mild.

This division took part in the landing in Suvla Bay in the week following Saturday, August 7th, and in the subsequent advance inland. The object being to surprise the enemy, it was necessary to throw all available force into the firing line at the earliest possible moment. A bare minimum of supplies, ordnance, water, and mules for transport having, therefore, been put on shore, the tugs and lighters necessarily occupied themselves with the landing of the troops, their bare equipment and emergency rations. This is essential to an understanding of the medical conditions. These were fresh troops, straight out from a life of healthy training at home, but Territorials with no experience of war. From two to three weeks they had spent on the sea, cooped up on board ship, where, with the best will and discipline in the world, athletic fitness could not be maintained. They were suddenly landed in almost tropical heat and thrown straight into action in a very sparsely cultivated country—and that a new line without trenches and with little cover. There were few local wells, giving little water and that of variable, mostly inferior, quality. The mules that brought food and water up by night were heavily shelled, the difficulties of distribution were great, the heat and strain severe, the casualties many. If in England, as is officially taught, a soldier loses a quart of water in marching 7½ miles, what must have been his water needs under these conditions? And yet often he could not get even the pint of water allowed him at that time for all purposes in the 24 hours. Hunger, thirst, fatigue, strain, continued day and night—inevitable under the circumstances—were bound to tell on the troops. They would have told even on the hardened veterans of Helles and Anzac. It was a severe military baptism for Territorials. The effect was a general weakening of bodily resistance to the microscopic foes, which fight impartially against both sides in every campaign, and which it is the peculiar privilege and most difficult task of the medical service to resist.

It is generally forgotten by the public, it is often not realised by the personnel of the non-regular Royal Army Medical Corps—as your own columns bear witness—that the treatment of wounds is a subsidiary function of the modern Army Medical Service. The first duty of the service, as officially laid down, is to prevent disease; the second to evacuate the sick and wounded; the third to treat those slightly sick and wounded, so as to secure their early return to the front; the fourth to give treatment and comfort to the individual for his own sake. It is with the fourth function that the Red Cross and public subscriptions and sympathies are mainly concerned. But it is on the first three functions that the efficiency of the army and the interests of the nation most vitally depend. These three

functions are almost the sole concern of the medical services on this Peninsula, that is at the front, and the first is in the hands of the regimental medical officer.

In the Suvla Bay fighting during the week after landing, the regimental medical officer, like the combatants, had to do what he could and how he could. Like them he was advancing in darkness under fire, through unknown roadless broken country, rock and scrub (thick bushes), hillocks and gullies, affording little cover and no opportunity of taking any long or broad views of his battalion or of his work. For some time he could not establish any one regimental aid-post; he crawled about, bandaging wounds with his stretcher-bearers and himself helping to bring in the wounded, sometimes by day, mostly by night. The strain was intense and four strong, healthy, mature regimental medical officers out of the 12 in the division succumbed to it in the first few days. One had dysenteric diarrhœa as his main symptom; one was suffering from exhaustion, capped by a shell explosion within a few feet; the third, a jolly young giant from a prosperous suburban practice, finally succumbed to the shock of being called to attend four of his best pals, laid out by a single shell. The fourth had lost his brother in the action, a combatant officer in the same regiment, and was brought down on a stretcher as if moribund; with the utmost pluck he pulled himself together in 24 hours and set out again for the trenches, but fainted on the way up and was packed off on a hospital ship. If such was the result of strain on the medical officers, it may be imagined what its effects were on the troops.

In a few days things began to improve; trenches gave some degree of shelter; the line was straightened out; definite regimental aid-posts were established; hours and duties defined; communications ensured; supplies improved. Still, the first thought of the regimental medical officer had to be the immediate welfare of his men, and treatment of the sick as well as of wounded began to bulk largely in his work. Sanitary work could only be extended to the provision of latrines and urinals whenever and however possible. There was bound to be a general fouling of the ground. Ablution was impossible. Flies, barely existent at first, were breeding freely, but as yet not obviously. The questions of food and drinking water were necessarily confined to those of quantity and distribution. Except for the heat of the day, the weather was entirely propitious. The main health object was to secure some kind of rest for men and officers, consistent with safety.

The further prevailing difficulty of the regimental medical officer at this stage lay in the inevitable changes of area. Units were constantly being shifted from one place to another in the firing line, or brought back to the rear for a comparative rest. Dangers by day and darkness by night made sanitary work impossible. The prevention of disease was, in fact, for the regimental medical officer, an impossibility. Anything that could be done lay in the hands of the company and regimental officers, whose attention was riveted on their fighting duties. Absolute prevention of disease in acute warfare is, in fact, impracticable. In actual fighting troops must depend for their health on luck, habit, and the supplies of nature and the Army Service Corps.

Since the end of August, however, the regimental medical officer has had his chance, although for actual prevention of disease the chance comes late. We have been settled into definite lines of trenches in a definite area, with a definite routine of duties—so long in the trenches, so long in "rest-camp." Casualties play a minor part, ill-health and definite disease are to the fore. Now is the time for the regimental medical officer to play his supreme part in war. Every morning at 7 or 8 he holds his sick parade, and on a hillside facing the Ægean he dispenses drugs from his panniers, gives advice to some 50 slightly sick, and decides in each case whether they are likely to be mere passengers in the boat for more than a couple of days. If so, they go down to the field ambulance on the beach; if not, he tinkers them up, encourages them, advises them, excuses them duty for 48 hours, and arranges a light diet for them.

Then come his general duties. Eight sanitary orderlies should be attending to the latrines, urinals, and slop-pits, collecting all rubbish and refuse about the camp and burning it on the incinerator. The kitchens and stores require constant inspection, the cooks constant vigilance. A non-commissioned officer and four water-duty men of the Royal Army Medical Corps attached to the unit should be at work upon the water-cart, straining the water, pumping it through alum and bleaching powder; sterilising the cloths; cleaning out all parts and vessels employed; keeping the whole in constant repair. The 16 stretcher-bearers should be properly distributed to report and give first-aid to any casualties that may occur. The medical officer's corporal will be carrying out the details of treatment ordered at sick parade; his orderly will be attending to his kit or dug-out, washing his clothes, taking messages for him. Company officers, too, have to be visited in connexion with their own share of sanitary responsibility for their respective lines or as regards the health of their individual men; men found breaking the sanitary regulations have to be brought up before orderly room. The commanding officer, the adjutant, the quartermaster must be frequently consulted at such times and places as they may be found disengaged.

All this internal regimental work is vital to the health of the unit, and is all made the more difficult on account of the constant change of personnel, both officers and men, as the campaign takes effect in sickness and casualties. The regimental medical establishment suffers no less than the rest, and the regimental medical officer has to work on an increasing task with diminished numbers, and those indifferently if at all trained in their duties. He has therefore to be constantly giving them practical demonstrations in their work and bringing them promptly to book for their mistakes or neglect.

It is on these particulars that the difference mainly lies between a good and indifferent regimental medical officer, but it is these very things that are strange to medical men fresh from civil life. Most of them can, and do, carry out efficiently the treatment of their slightly sick and of their casualties; most are eager to do heroic deeds in succour of the wounded. But medical students learn little public health at hospitals, and subsequently in home practice they leave such things more and more to sanitary authorities. On being put to regimental duty they find attention fixed on more urgent matters, and, not wishing to make difficulty, are tempted to let these duties slide.

The work of the Deputy Assistant Director of Medical Services is of first interest, as it gives a complete view of the medical work—and incidentally of all the work—of a division. As deputy to his chief he is second in command of the Royal Army Medical Corps of the division, and acts on his chief's behalf in his absence from camp or in case of his sickness. He is thus brought in touch with the work of the three field ambulances, with the clearing stations, with the other departments of his headquarters, with the higher authorities of the corps and of general headquarters. He personally visits the regimental medical officers and their units and the advanced dressing stations of the field ambulances. As medical officer to the headquarters' unit he is himself responsible for the health of an important body of men, in this case numbering, with attached details, some 400. As divisional sanitary officer he inspects the whole divisional area from the beach to the firing line, and in this case has a sanitary section of 20 men to supplement the sanitary work of the units. A more interesting job for a civilian medical man in this war could hardly be imagined.

Colonel Fremantle concludes his report of the life and duties of a regimental medical officer at Suvla Bay with an expression of hope that he and those with him will be there when the brave purpose of the expedition is attained.

A CANADIAN HOSPITAL FOR FRANCE.—On the occasion of his visit to France last summer Sir Robert Borden, on behalf of the Dominion of Canada, offered to provide a hospital for French soldiers. The offer having been accepted by the French Government, the hospital will be opened at St. Cloud at the end of the present month. The Canadian Medical Service will provide the staff, Colonel A. Mignault being in charge.

INVALID PRISONERS OF WAR IN SWITZERLAND.—A Swiss Correspondent writes: The negotiations in progress during the past few months in regard to the reception in Switzerland of invalid prisoners of war have now reached an advanced stage. The Swiss military medical department announces that the first batch of prisoners who will receive treatment at the Swiss health resorts will consist of 1000

French and 1000 German prisoners, all in the early stages of tuberculosis. The French prisoners, now in Germany, will be sent to Montana and Leysin; the German prisoners, now in France, to Davos. Prisoners in an advanced stage of tuberculosis will not come under this scheme. The invalids will be fed and cared for on the lines of the régime now applied to Swiss soldiers in a similar state of health. They will be subjected to a certain measure of control, but will not be guarded by soldiers. The Governments of France and Germany will reimburse Switzerland for all expenditure incurred and have agreed to surrender any of the prisoners who may escape to their own country.

BRITISH RED CROSS SOCIETY AND THE ORDER OF ST. JOHN: THE MONTENEGRO UNIT.—The unit sent to Montenegro a year ago by the British Red Cross Society under Dr. F. G. Clemow, C.M.G., returned safely to England last week. The unit on arrival in Montenegro was placed in charge of the principal military hospital in that country at Plevlje, the chief town of the former *sanjak* of Novi Bazar. When the evacuation of that region became necessary in November the unit succeeded in removing southwards, sending to their homes all the patients (numbering over 330) then in the hospital, but the bulk of the hospital stores had to be left behind owing to lack of transport. The unit itself travelled from the north to the south of Montenegro and across Northern Albania to the small port of San Giovanni di Medua, whence, on Christmas Eve, it was taken to Malta by a British hospital ship which had been sent there from Mudros with that object.

WOMEN'S RESERVE AMBULANCE.—This body of women, known also as the Green Cross Society, now consists of more than 300 members, and is doing most useful work. Trains are met at all hours of the night and men on furlough conveyed to railway termini or Y.M.C.A. huts in motor-cars, and limbless men are conveyed to Queen Mary's Hospital at Roehampton. The society also performs many other transport duties. The French Red Cross having expressed the wish that a foreign unit of the Green Cross might be sent to France, the Women's Reserve Ambulance urgently ask for subscriptions. The address of the headquarters is 199, Piccadilly, London, W.

RUSSIAN WATERING PLACES.—The War Office states that Prince Oldenburg, head of the Russian Red Cross, has offered to place the watering places in the Caucasus and the Crimea at the disposal of the Government for the use of wounded and invalided British officers. The invitation included the grant of a free railway ticket to the officer's destination and free medical treatment. The Government regret that they have been obliged to decline this very generous offer as, under present conditions, access to these watering places is not practicable.

ANOTHER MEDICAL WOMAN LOST ON THE SS. "PERSIA."—Nothing has been heard of Mrs. Grant, M.B., Ch.B. Edin., who with her husband, Rev. A. C. Grant, was a passenger on board the ill-fated *Persia* when the vessel was torpedoed on Dec. 30th, 1915. Mrs. Grant was the second daughter of ex-Lord Provost Maitland, of Aberdeen, and before her marriage, which only took place last November, was engaged, as Dr. Christian Maitland, in medical missionary work in India. Mrs. Grant took a B.Sc. degree at Aberdeen University in 1908 before graduating M.B., Ch.B. at Edinburgh. For a time she was on the staff of the Royal Aberdeen Hospital for Sick Children, leaving for India in 1912.

RED CROSS GIFT TO CANADIAN HOSPITALS.—The Canadian Red Cross Society has given £25,000 towards building and equipping recreation rooms at Canadian hospitals and convalescent homes in England and on the Continent.

WE note with interest the announcement that the Rev. Courtenay Charles Weeks, M.R.C.S., L.R.C.P. Lond., vicar of St. Hilda's, Crofton Park, Brockley, is in surgical charge of the Bavière Military Hospital in Malta.

A CENTENARIAN.—Mrs. Lambert, of Gloucester-road, Edmonton, is said to have celebrated the 102nd anniversary of her birthday on Jan. 6th. There are now five generations of the family.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the First Professional Examination of the Conjoint Examining Board held on Jan. 4th, 5th, 6th, and 7th, the following candidates were approved in the undermentioned subjects:—

Chemistry and Physics.—Valentine Holland Barker, London Hospital; Edward Rowan Boland, Guy's Hospital; Ernest Brazao, Middlesex Hospital; Henry Dryerre, Edinburgh; Herman Meyer Gerson, London Hospital; William Hardman, Wedgewood Institute, Burslem; Edwin Rayner Jagger, Manchester University; Herman Siegfried Nicolaas Menko and George Geoffrey Newman, London Hospital; Harry Norman Schapiro, Guy's Hospital; William Walsham, St. Mary's Hospital; and Octavia Margaret Wilberforce, London School of Medicine for Women.

Chemistry.—Sydney Hazeldine, University College; Madeline Phyllis Parker, London School of Medicine for Women; Guy Kingham Reeves, Guy's Hospital; and Benn Roland Reynolds, University College, Cardiff.

Physics.—Henry Leigh Bowen, Birmingham University; John Walter Hulme, Middlesex Hospital; Allen Arthur Knapman, Royal Albert Memorial College, Exeter; Margaret Ombler Meek, Cambridge and London School of Medicine for Women; and George Foster Smith, Salford Technical Institute.

Biology.—Valentine Holland Barker, London Hospital; John Binford Barnett, Birmingham University; Edward Rowan Boland, Guy's Hospital; Hubert Brookman, Middlesex Hospital; Hitchon Seater Chadwick, Manchester University; Samuel Hyman Coplans, Guy's Hospital; Cecil Weldon Empey and Herman Meyer Gerson, London Hospital; Kate Glyn-Jones, London School of Medicine for Women and Bedford College; John Beaumont Gregor, Guy's Hospital; Ahmed Hamid, Middlesex Hospital; Eric Hardy, Guy's Hospital; Edwin Rayner Jagger, Manchester University; Mohammed Abdul Razzak Khalifa, Guy's Hospital; Allen Arthur Knapman, Royal Albert Memorial College, Exeter; Margaret Ombler Meek, Cambridge and London School of Medicine for Women; Herman Siegfried Nicolaas Menko, London Hospital; Hubert Stanley Morris, Guy's Hospital; James Lucius Camillo O'Flyn, University College, Cardiff; Evan Albert Idris Phillips, University College; Betsey Porter, London School of Medicine for Women; Edgar Lewis Jones Reason, St. Mary's Hospital; Guy Kingham Reeves, Guy's Hospital; Isaac Resnikoff, King's College; and Harry Norman Schapiro, Guy's Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Preliminary Science Examination for the Licence in Dental Surgery held on Jan. 4th, 6th, and 7th the following candidates were approved in the undermentioned subjects:—

Chemistry and Physics.—Gilbert Leedham Clements, Municipal Technical School, Birmingham; Frank Dawson Gratrix, Municipal Technical School, Bolton; Wallace Duncan Hatton, Guy's Hospital; John Godfrey Kingsbury, Taunton School; Joseph Lauer, Royal Dental Hospital; Edith Mynott Norman, School of Medicine for Women; Harold George Skitt, Stafford Technical School; Stanley Vernon White, Guy's Hospital; William Parry Williams, University College, Bangor; and Edric Frank Wilson, Guy's Hospital.

Chemistry.—William Thomas Lloyd Douglas, London Hospital.

Physics.—Lilian Forbes and Myer Ginsberg, Polytechnic Institute; and William Gerrit Ryss, Middlesex Hospital.

UNIVERSITY OF LONDON.—At examinations for medical degrees held recently, the following candidates were successful:—

FIRST EXAMINATION.

Pass List.—*Donald Drysdale Anderson, Highgate School; Sarah Elizabeth Andrews, Bedford College and University Tutorial College; Marjorie Muriel Sibley Bartlett, London (Royal Free Hospital) School of Medicine for Women; Arthur Bearblock, University College; Margarida Rachel Bensande, University of Birmingham; Moshek Zelmanovitch Bochenek, London Hospital; Hylda Catherine Briscoe, London (Royal Free Hospital) School of Medicine for Women; John Laird McKenzie Brown, St. Bartholomew's Hospital; Geoffrey H. A. Patterson Clavier, University Tutorial College and London Hospital; Saul Cohen, Guy's Hospital; Alison Margaret Collie, London (Royal Free Hospital) School of Medicine for Women and private tuition; Catherine Agnes Cowan, South-Western Polytechnic Institute and London (Royal Free Hospital) School of Medicine for Women; Beryl Dyer, London (Royal Free Hospital) School of Medicine for Women; Winifred Margaret Fawssett, London (Royal Free Hospital) School of Medicine for Women and private tuition; Kathleen Field, Girton College and London (Royal Free Hospital) School of Medicine for Women; Pinkus Joseph Freilich and Isaac Frost, King's College; Nahum Gallant, Whitechapel Foundation School and London Hospital; Kate Glyn-Jones, Bedford College and London (Royal Free Hospital) School of Medicine for Women; Isaac Goldberg, London Hospital; Eleanor Graham, London (Royal Free Hospital) School of Medicine for Women; Theodore Franz Händel, King's College and private study; Albert James Harris and Sidney Estridge Harvey, London Hospital; Frank Heber, University Tutorial College; Reginald Walter Patrick Hosford, Highgate School; Doris Marjorie Howard and Margaret Gray Jones, London (Royal Free Hospital) School of Medicine for Women; Henry Charles Victor Joy, London Hospital; Reginald Keene, Highgate School; Mary Elizabeth Kennedy, West Ham Municipal Technical Institute and Girton College; William Edward Kappel Kirby, University Tutorial College; Doris Gertrude Knowles, London (Royal Free Hospital) School of Medicine for Women; Carol Pinson Lake, University College, Exeter; Gdal-Leizer Levin, King's College; Lewis Oswald Lindsay, London Hospital; Mary Michael, London (Royal Free

Hospital) School of Medicine for Women; Marjorie Pierce, University of Leeds and London (Royal Free Hospital) School of Medicine for Women; Charles Arnold Probert, private study; Joseph Proujansky, London Hospital; Walter William Reeve, B.Sc., University College; *Edward Horace Richards, Victoria College; Eric Augustus Roberts, St. Thomas's Hospital; Melbourne Victor Roberts, London Hospital; Wm. Arthur Merrett Smart, B.Sc., University Tutorial College; Alfred William Lumsden Smith, Derby Technical College; Sonia Straschun, Girton College and London (Royal Free Hospital) School of Medicine for Women; Kathleen Annie Harvey Sykes, University of Liverpool; Arthur Walford Taylor, Epsom College and St. Bartholomew's Hospital; Harold Edwin Thomas, University College; Raphael Thursz, King's College; Norah Edith Trouton, Madeline Hilda Jane Umpleby, and Dorothea Compston Wigfield, London (Royal Free Hospital) School of Medicine for Women; and Geoffrey Morton Willey, King's College.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

* Awarded a mark of distinction in Physics.

SOCIETY OF APOTHECARIES OF LONDON.—At the Primary Examination (Part II.) held on Jan. 3rd, 5th, and 6th the following candidates were successful:—

Anatomy.—R. W. C. Ball, Middlesex Hospital; C. C. Bennett, T. G. D Bonar, C. V. Brown, and H. G. Burford, Guy's Hospital; N. Chena and A. E. Collie, Middlesex Hospital; L. Dinerstein, London Hospital; J. H. C. Eglinton, Bristol: F. K. Escritt, Guy's Hospital; D. C. Farquharson, St. Mary's Hospital; St. G. B. D. Gray, Guy's Hospital; G. H. C. Harding, Liverpool; G. H. Johnson, Middlesex Hospital; W. A. Jones, Glasgow and Cardiff; E. H. L. Le Clezio, Guy's Hospital; J. S. Lewis, St. Mary's Hospital; H. O. Long, Guy's Hospital; W. D. McRae, London Hospital; A. G. A. Miller, Middlesex Hospital; C. Moffatt and A. A. Osman, Guy's Hospital; R. H. Parry, Middlesex Hospital; A. L. S. Payne, G. F. Peters, and R. S. Ralph, Guy's Hospital; A. H. Richards, St. Mary's Hospital; S. H. Robinson, Guy's Hospital; H. M. Savery and W. M. Savery, Middlesex Hospital; A. G. M. Severn, C. G. D. Siggs, W. H. Simmons, W. Skelly, and W. H. Steavenson, Guy's Hospital; E. W. Terry, Manchester; R. A. Walker, St. Thomas's Hospital; R. L. Walker, St. Mary's Hospital; and R. W. Warrick, E. R. Webb, and S. A. Withers, Guy's Hospital.

Physiology.—R. W. C. Ball, Middlesex Hospital; C. C. Bennett, T. G. D. Bonar, and H. G. Burford, Guy's Hospital; N. Chena and A. E. Collie, Middlesex Hospital; L. Dinerstein, London Hospital; J. H. C. Eglinton, Bristol; D. C. Farquharson, St. Mary's Hospital; St. G. B. D. Gray, Guy's Hospital; G. H. C. Harding, Liverpool; R. A. Hickley, St. Mary's Hospital; G. H. Johnson, Middlesex Hospital; E. H. L. Le Clezio and H. O. Long, Guy's Hospital; A. G. A. Miller, Middlesex Hospital; C. Moffatt and A. A. Osman, Guy's Hospital; R. H. Parry, Middlesex Hospital; A. L. S. Payne, G. F. Peters and R. S. Ralph, Guy's Hospital; A. H. Richards, St. Mary's Hospital; S. H. Robinson, Guy's Hospital; H. M. Savery and W. M. Savery, Middlesex Hospital; A. G. M. Severn, C. G. D. Siggs, W. H. Simmons, and W. Skelly, Guy's Hospital; J. Stephen, Manchester; W. H. Steavenson, Guy's Hospital; E. W. Terry, Manchester; C. de B. Thompson, Middlesex Hospital; R. A. Walker, St. Thomas's Hospital; R. L. Walker, St. Mary's Hospital; and R. W. Warrick, E. R. Webb, and S. A. Withers, Guy's Hospital.

DONATIONS AND BEQUESTS.—The Royal Infirmary, Aberdeen, has been endowed to the amount of £373 per annum by Sir Alexander M'Robert, of Cawnpore.—The late Mr. William Philip, of Inverurie, has by his will made the following bequests to hospitals: £300 to Morningfield Hospital, Aberdeen; £200 to Aberdeen Royal Infirmary; £200 to Royal Aberdeen Hospital for Sick Children; £100 each to Aberdeen Dispensary, Maternity Hospital, and Vaccine Institution; and £100 to the Aberdeen Eye Institution.—On the death of Mrs. Grewar, widow of James P. Grewar, of Arbroath, £800, being one half of the residue of the estate, will go to the Arbroath Infirmary to form part of the endowment fund of that institution.—The Girdlers' Company have recently given some £500 for distribution among hospitals, schools, and charitable institutions.

EDINBURGH ROYAL INFIRMARY.—At a meeting of the members of the Chamber of Commerce and Manufactures held on Dec. 30th, 1915, Dr. W. B. Blaikie, as the chamber's representative on the Royal Infirmary board, stated that the voluntary contributions had gone up by no less a sum than £10,955, or more than 50 per cent. on the ordinary contributions during the year ending Sept. 30th, 1915. The total number of patients treated in the wards had been 13,102, an increase of 284 on the previous year. The average daily number of patients had been 903, as against 847 in 1914, and the average period of treatment had been 23·7 days, as against 23·6 days. Of the new cases admitted, Edinburgh and Leith gave 5972 and the country districts 6380. The number of out-patients had been 36,639, a slight decrease on 1914, when the number was 37,897. The ordinary income for the year had been £46,474, an increase of £10,142. Of this amount subscriptions (not including legacies) accounted for £30,778, as against a total of £19,820 in 1914. During the year the board arranged to set apart 200 beds for military and naval patients, and was prepared to give more when required.

FIRST-AID LECTURES ON ANATOMY AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A course of lectures on anatomy of the body for first-aid and ambulance students will be given by Professor Arthur Keith in the theatre of the College at 5.30 P.M. on Mondays, Wednesdays, and Fridays in February, March, and April, beginning on Monday, Feb. 14th, and ending on Friday, May 5th. The course is open to all members of ambulance companies and of first-aid classes. Anatomical preparations and specimens will be on exhibition in the theatre from 4 to 7 P.M. on lecture days.

ULSTER MEDICAL SOCIETY.—At the third meeting of this session of the Ulster Medical Society, held in the Medical Institute, Belfast, on Jan. 6th, Dr. J. R. Davison (Vice-President) in the chair, Dr. W. Calwell read notes of a case of Polycythæmia with marked increase in the number of red blood corpuscles. Dr. J. Singleton Darling read a communication on the Indications for Cæsarean Section, giving details of eight cases of this operation, and of one of pubiotomy. In the discussion which followed the tendency was that Cæsarean section should be done more frequently. Mr. Howard Stevenson read a paper on the Treatment of Fractures by Open Operation, with illustrative cases.

THE LATE DR. THOMAS BUSHBY.—The death is reported at Leamington of Thomas Bushby, M.B., C.M. Edin., M.R.C.P. Lond., honorary physician to the Northern Hospital, Liverpool, with which he was associated for over 15 years. He was lecturer on clinical medicine at the Liverpool University and was well known as a physician throughout the North of England. For the past 12 months Dr. Bushby held the rank of Major at the Highfield Military Hospital, but was obliged to resign owing to ill-health. Dr. Bushby was 58 years of age. He leaves a widow and two children.

LECTURES ON GENERAL PROFESSIONAL ORGANISATION.—On Jan. 17th and five following Mondays, at the London School of Economics and Political Science, Mrs. Sidney Webb, D.Litt., will give a course of lectures on professional organisation, including in her syllabus the subject of the present organisation of the medical profession. Dr. F. H. Hayward, Litt.D., will on Feb. 28th and the three following Mondays give a course of lectures dealing more particularly with the teaching profession. Teachers will be admitted to Dr. Hayward's lectures free. The lecture hour is 6 P.M.

THE LATE DR. JOHN BATE BAWDEN.—Dr. J. B. Bawden died at his residence, Bodmin, Cornwall, on Jan. 2nd, in his 55th year. The deceased, who was the son of the late Mr. James Bawden, of Cardynham, received his medical education at Edinburgh University, graduating M.B., C.M. in 1884; two years later he took his M.D. degree. After practising at London, and at Kidwelly, where he was medical officer of health, he went to Bodmin. He was medical officer of the Bodmin district and workhouse. Dr. Bawden will be much missed in Bodmin, and sympathy is felt there for his widow and two daughters, and a son, who is a lieutenant in the Devon and Cornwall Light Infantry.

LECTURES ON INFANT CARE.—An advanced course of lectures on infant care for voluntary health workers, mothers, teachers, and so forth, will be held at the Royal Society of Medicine, 1, Wimpole-street, W., on successive Mondays, from Jan. 24th to April 10th. The lecture hour will be 5.30 to 6.30 P.M. The lecturers include Dr. Mildred Burgess, Dr. H. C. Cameron, Dr. David Forsyth, Dr. Eardley Holland, Professor Henry Kenwood, Dr. Eric Pritchard, Dr. C. W. Saleeby, and Dr. Florence Willey. Dr. Pritchard will deliver a supplementary course of six practical clinical demonstrations at St. Marylebone Dispensary, Welbeck-street, on Thursday afternoons, from 4.30 to 5.30. Further information can be obtained from Miss Halford, secretary of the National Association for the Prevention of Infant Mortality (under whose auspices the lectures are being arranged), 4, Tavistock-square, London, W.C.

BRISTOL DISPENSARY.—The annual report of the Bristol Dispensary for 1915, which has just been issued, states that during the year 1772 patients were treated, against 1874 in the previous year. The financial statement showed the expenditure amounted to £3589, the income was £2060, and £1528 was transferred from the investment account to balance the deficit.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Central Midwives Board.

PARTICULARS of the work accomplished by the Central Midwives Board during the year ended March 31st, 1915, are contained in the report which has just been presented to Parliament. In the report it is stated that the Midwives roll on the date mentioned contained the names of 38,869 women, an increase for the year of 1579 on the total number appearing on the roll. This increase was less than that of the previous year by 148, but this diminution is more than accounted for by the considerable increase in the number of deaths notified to the Board. The new names added to the roll showed an actual, though small increase for the corresponding figures of last year. Of the total number of those on the roll, 19,057 have passed the Board's examination, and 9548 have been admitted in virtue of prior certification under Section 2 of the Midwives Act. The trained midwives are consequently 28,605 in number, and the untrained 10,264, the respective proportions being 73·6 and 26·4, as against 71·3 and 28·7 at the corresponding period of the previous year. While the proportion of trained midwives must necessarily increase with accelerated rapidity it must be remembered that the percentage of trained midwives who practise as such is relatively small, and may be estimated at less than 23 per cent. of those on the roll. Of the untrained midwives it is probable that about 56 per cent. are in practice, though frequently to a small extent only.

It is further stated in the report that in the Midwives roll current in the period a dagger is prefixed to the name of every woman appearing in the lists returned to the Board by the local supervising authority as having notified her intention to practise during 1914. The total number of practising midwives is thus ascertained to be 12,091, of whom 6439, or 53·25 per cent., are trained, and 5652, or 46·75 per cent., untrained. The true number of practising midwives, in the opinion of the Board, is undoubtedly higher than that here given, as in at least two counties little or no effort appears to be made to enforce notification. If the practising midwives who thus escape supervision could be included the relative proportion of untrained to trained would no doubt be somewhat higher.

Another subject to which the report gives attention is the question of germicides for use by midwives. In regard to it the Board states that the question of adopting a specific germicide for use by midwives in the treatment of the eyes of infants during the first few days after birth has recently been considered. The Board has refrained from recommending any special drug in such cases, inasmuch as medical opinion on the subject is not unanimous, and it would be unwise to recommend the use of any particular germicide where a breach of the rule could not rationally be punished if the delinquent were able to quote recognised authority for the use of a germicide other than that prescribed by the Board.

The Board has passed a resolution that it is desirable to increase the length of training to six months as soon as arrangements can be made.

HOUSE OF COMMONS.

WEDNESDAY, JAN. 5TH.

Accommodation for Wounded in Asylums.

Mr. KING asked the Under Secretary for the Home Department to state the present number of beds in institutions under the Lunacy Commissioners which have been placed at the disposal of the War Office for wounded soldiers; whether this number had been recently, or was shortly to be, increased; and what provisions had been, or would be, made for the civilian population displaced.—Mr. BRACE replied: Ten asylums in England and Wales and isolated parts of two others have been placed at the disposal of the War Office for use as hospitals, and accommodation has thereby been provided for over 14,000 sick and wounded soldiers. Arrangements are in contemplation for converting into hospitals two more asylums. In addition, an asylum which at the outbreak of the war was nearly completed, but not yet occupied, was taken over by the War Office, and a similar course is to be adopted with another new asylum now approaching completion. Nearly all the civilian patients displaced by these new arrangements have been distributed over the remaining asylums, with the result that most of these asylums have at present more inmates than would be considered advisable by the Board of Control in normal times. Every effort is being made to minimise the inconveniences of the arrangement, which is only justified by the exceptional circumstances of the present time.

Recruitment of Asylum Attendants.

Mr. O'GRADY asked the Under Secretary for the Home Department whether he was aware that, owing to the number of attendants who had enlisted into His Majesty's forces, the West Riding (Wakefield) Asylum Board or its officers had placed female nurses in charge of insane men inmates; and would he give instructions that no further attendants were to be recruited to His Majesty's services until asylum authorities were in a position to replace them by temporary male labour.—Mr. BRACE answered: Female nurses are being employed in four of the 24 wards for male patients at Wakefield Asylum. Male attendants are also employed in these wards for certain duties. The inmates of the wards in question are all quiet cases which can properly be attended by women—boys, sick cases, or chronic cases of a quiet class. The employment of female nurses to release men for enlistment is being allowed in suitable cases and under proper safeguards, and this matter is being carefully watched by the Board of Control.

THURSDAY, JAN. 6TH.

Vaccination Acts in Ireland.

Replying to Mr. P. MEEHAN, who asked whether steps would be taken to have a conscientious objector's clause introduced into the Irish Vaccination Acts, Mr. BIRRELL (Chief Secretary to the Lord-Lieutenant for Ireland) said that he could not say that he thought there was any general demand at present for any legislation on a subject of that nature in Ireland.

MONDAY, JAN. 10TH.

Antityphoid Inoculation in the Army.

Mr. KING asked the Under Secretary for War whether it was intended to inoculate with antityphoid serum all or any men who might be compulsorily attested under the operation of the Military Service (No. 2) Bill.—Mr. TENNANT replied: I think the men in question will be in the same position as men who undertake voluntary enlistment.

Mr. W. THORNE asked the Under Secretary for War whether he could now give the figures showing the number of cases of, and deaths from, typhoid fever, showing separately inoculated and uninoculated, among officers and men of the British army in the United Kingdom and in France and Belgium since August 1st, 1914, and the date to which the figures were compiled.—Mr. TENNANT replied: The figures I have cover the period from the commencement of hostilities to Nov. 10th. During this period 1365 cases of enteric fever were reported as having occurred amongst the British troops in France and Belgium. Of these 1150 cases have been definitely diagnosed after bacteriological examination. In 579 cases where there had been inoculation there were 35 deaths, and in the 571 cases where there had not been inoculation there were 115 deaths. In the United Kingdom, from August 1st, 1914, to Oct. 30th, 1915, 540 cases of enteric fever were reported and 87 deaths. Thirty-nine per cent. of these cases occurred in men who had not been inoculated, but I cannot say how the deaths were distributed amongst the inoculated and uninoculated respectively. For paratyphoid no system of inoculation has yet been adopted.

Medical Rejections from the Army.

Major GLAZEBROOK asked the Under Secretary for War whether he was aware that men who were known to be medically unfit were often retained with their units for a considerable length of time before receiving their discharge, and whether he would take steps to accelerate their discharge, with the object of saving the country the expense of their upkeep and at the same time increasing the productive power of the country by returning them to their civil occupations; and whether, in the case of groups shortly to be called up, orders would be given to the doctors concerned to reject without delay, after a most thorough examination, those whose fitness was doubtful.—Mr. TENNANT said in reply: I have already stated that the Army Council is doing all it can to expedite the discharge from the army of any men who are permanently unfit. The desirability of this is obvious. As regards the second part of the question, arrangements have been made for men of groups called up to be examined without delay as to their fitness by special recruiting medical boards, and the honourable gentleman may rest assured that these boards will certainly not pass or reject any man without a most thorough examination.

Health of Troops on Salisbury Plain.

Sir EDWIN CORNWALL asked the Under Secretary for War whether he could give the mortality and the cases of sickness among the troops in the Salisbury Plain district since the beginning of September to date; and whether, in view of the reports as to the condition of the camps, he would appoint a small committee of the House composed of men with experience of housing matters to visit the camps and report if improvements were possible.—Mr. TENNANT answered: The annual ratios per 1000 are for the Salisbury Plain district during the period Sept. 1st to Dec. 31st: Admissions, 325·4; deaths, 1·88. But these ratios are lower

than those for peace-time, and in these circumstances I cannot see any necessity for the appointment of a committee.

TUESDAY, JAN. 11TH.

Duty on Alcohol used in Hospitals.

Sir PHILIP MAGNUS asked the Chancellor of the Exchequer what steps he had taken, or proposed to take, to give effect to his promise to remove the duty on alcohol used for medical or surgical purposes in hospitals.—Mr. MCKENNA replied: It is proposed that relief should take the form of a grant from public funds. A committee is being appointed to advise us as to the basis of such grants.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

PEACHELL, G. B., M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Superintendent of the Dorset County Asylum, Dorchester.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £180 per annum, with board and laundry.

BRIDGWATER HOSPITAL.—House Surgeon, unmarried. Salary at rate of £125 per annum, with board, lodging, and washing.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, residence, and washing.

CHESTER, CHESHIRE COUNTY COUNCIL.—Female Assistant Medical Officer. Salary £350 per annum.

CHESTER COUNTY ASYLUM.—Junior Assistant Medical Officer. Salary £200 per annum, with board, lodging, and washing.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, apartments, and laundry.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, residence, &c.

DUNROSSNESS PARISH.—Medical Officer and Vaccinator. Worth over £600.

GRAVESEND HOSPITAL.—House Surgeon. Liberal salary, with board, residence, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

KING'S LYNN, 2/2ND SOUTH MIDLAND MOUNTED BRIGADE FIELD AMBULANCE.—Medical Officers.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—Second Resident Medical Officer. Salary £150 per annum, with residence, &c.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, attendance, coal, and gas.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments and board.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—Resident Surgical Officer at High Street Hospital and Junior Resident at Whitworth Street West Hospital. Salaries at rate of £150 per annum, with board and residence.

MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Female Resident Surgeon. Salary £120 per annum, with board, apartments, and laundry.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.—Junior House Physician. Salary £100 per annum, with board and residence.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female Pathologist. Salary £125 per annum.

OLDHAM COUNTY BOROUGH.—Assistant Schools Medical Officer. Salary £325 per annum.

PRESTON, LANCS. COUNTY ASYLUM, Whittingham.—Locum Tenens, unmarried. Salary £7 7*s.* per week, with apartments, board, and washing.

READING, ROYAL BERKSHIRE HOSPITAL.—House Surgeon for six months. Salary as arranged.

ST. PANCRAS INFIRMARY, London.—Senior Assistant Medical Superintendent of South Infirmary, Pancras-road, N.W., and Senior Assistant Medical Officer of House adjacent. Also Locum Tenens at Infirmary. Salary at rate of £7 7*s.* per week, with usual residential allowances.

SOUTHAMPTON COUNTY BOROUGH FEVER HOSPITAL.—Resident Medical Officer of Health. Salary £300 per annum, with residence, board, and washing.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—Senior Resident Medical Officer. Salary £250 per annum, with board, lodging, and washing.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Female House Surgeon. Salary £150 per annum, with board, apartments, and washing.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Fintona, in the county of Tyrone; and at Hoddesdon, in the county of Hertford.

Births, Marriages, and Deaths.

BIRTHS.

BERTRAM WATSON.—On Jan. 6th, at 2, Ripon-road, Harrogate, to Dr. and Mrs. Bertram Watson, a son.

INGRAM.—On Dec. 29th, 1915, at Puerto, Orotava, Teneriffe, the wife of Dr. J. K. D. Ingram, of a daughter.

KERR.—On Jan. 7th, at "Ailsa," St. Helens, Lancs, the wife of James R. Kerr, Ch.M. Glasg., of a son.

PEACHELL.—On Jan. 2nd, at Whitecroft, Carisbrooke, Isle of Wight, to Dorothy, the wife of Dr. Ernest Peachell, a son.

PENNY.—On Jan. 7th, to the wife of Captain C. H. Greville Penny, R.A.M.C., at Glenfield, Green Island, a daughter.

TROUP.—On Jan. 9th, at Hawkwell-place, Pembury, the wife of Captain W. Annandale Troup, M.B. St. And., R.A.M.C., of a son.

MARRIAGES.

AINGER—WILLIAMS.—On Jan. 7th, at St. James's Church, Brighton, and on Dec. 29th, 1915, by H.B.M. Consul-General, at the British Consulate, Rouen, William Bradshaw Ainger, F.R.C.S. Eng., Captain, R.A.M.C. (T.F.), to Elsie Mary, daughter of the late William Williams, of Courts Heart, Britton Ferry, S. Wales.

DAVIES—FOSTER.—On Jan. 5th, at St. Michael and All Angels' Church, Northampton, Captain J. P. H. Davies, R.A.M.C. (T.), to Marjorie Etheldred, only daughter of Leonard Burtchaell Foster and Mrs. Foster, of Northampton.

GIBSON—HALL.—On Jan. 6th, at the Parish Church, Holt, Norfolk, David Gibson, M.B., Ch.B. Glasg., to Christina Collinge, youngest daughter of Mr. and Mrs. W. J. Hall, late of Heaton Mersey, Manchester.

STEVENSON—MCCRAE.—On Jan. 5th, at St. Alban's Church, Birmingham, Captain G. H. Stevenson, R.A.M.C. (S.R.), to Grace Dorothy, youngest daughter of the late James McCrae, Esq., and Mrs. McCrae, of Moseley.

WARNER—MALLET.—On Jan. 6th, at St. Alban's Church, West Kensington, Charles Horne Warner, B.Sc., F.I.C., D.I.C., to Refna Mallet, M.R.C.S., L.R.C.P. Lond.

WILKINSON—GROOM.—On Jan. 8th, at Stokesay Parish Church, Lieutenant John Douglas Wilkinson, R.A.M.C., to Ida, youngest daughter of Mr. and Mrs. Herbert Groom, of Stokesay, Shropshire.

THE engagement is announced of Surgeon Herbert White, Royal Navy, of H.M.S. *Shannon*, son of the late Sir Edward White, J.P., and Mildred, daughter of the late John James Christmas, J.P., of Cottesloe, Western Australia. (Australian papers please copy.)

DEATHS.

ATKINSON.—On Jan. 1st, as the result of an accident, Hugh Latimer Atkinson, M.B. Irel., of Lower-road, Rotherhithe, S.E.

DAVIS.—On Dec. 30th, 1915, Surgeon Lieutenant-Colonel J. Norman Davis in his 78th year.

HEWITT.—On Jan. 6th, at Brighton, Sir Frederic William Hewitt, M.V.O., Anæsthetist to His Majesty the King, late of Queen Anne-street.

PARSONS.—On Jan. 9th, at his residence, Eastern-avenue, Reading, Berks, Sidney Parsons, surgeon, aged 72 years.

PAYNE.—On Jan. 5th, at Meridor, Shudy Camps, Cambs., George W. Payne, L.D.S. Eng., aged 72 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

CHURCHILL, J. AND A., London.
Primary Lung Focus of Tuberculosis in Children. By Dr. Anthon Ghon (Prague). English edition. Authorised translation by D. Barty King, M.A., M.D. Edin., M.R.C.P. Lond. & Edin., Assistant Physician to Royal Hospital for Diseases of the Chest, London. Price 10*s.* 6*d.* net.

LAURIE, T. WERNER, London.
An Irishwoman in China. By Mrs. de Burgh Daly. Price 10*s.* 6*d.* net.
A Modern Columbus: Voyages, Travels, and Discoveries. By R. G. Knowles. Price 7*s.* 6*d.* net.
Roberts' Billiards for Amateurs. By Charles Roberts. Price 1*s.* net.

LONGMANS, GREEN AND CO., London.
In a French Military Hospital. By Dorothy Cator. Price 2*s.* 6*d.* net.

THACKER, SPINK, AND CO., Calcutta and London.
Clinical Methods for Students of Tropical Medicine. By G. T. Birdwood, M.A., M.D., D.P.H., Lieutenant-Colonel, I.M.S. Second edition. Price Rs.2.8.

THE ST. CATHERINE PRESS, 34, Norfolk-street, London.
The Wounded French Soldier. By Dion Clayton Calthrop. Published in aid of the French Cross (Comité de Londres). Price 1*s.* 6*d.* net.

WISTAR INSTITUTE OF ANATOMY AND BIOLOGY, Philadelphia.
The Rat Reference Tables and Data for the Albino Rat and the Norway Rat. Compiled and edited by Henry H. Donaldson.

Notes, Short Comments, and Answers to Correspondents.

A VENTILATING GAS FIRE.

IN the earlier days of the gas fire the system fell into disrepute on three counts: first, the combustion products did not entirely escape up the flue, but vitiated the air of the room to some extent; secondly, even when that was not the case there was no efficient ventilation of the room as there is with the open coal fire; and, thirdly, the flames were irritatingly noisy. Until quite recently we have not examined a gas fire which quite satisfied us on all three points. Messrs. John Wright and Co., of Essex Works, Birmingham, have introduced an "injector ventilating" gas fire which shows that these essentials have received considerable attention, and the result is a very important gain to this system of heating by radiant gas fires. This fire not only secures the complete withdrawal of the products of combustion, but by means of a second opening a powerful in-draught of air from the room is induced to flow up the chimney. This ventilates the room as effectively as the open coal fire, and a true atmospheric flame is secured which is constant in its character and unaffected by variations of pressure; above all it is silent. It is surprising to see a clean blue intense flame free from purring sound. This has been effected by bringing about a thorough mixing of air and gas by means of a perforated thimble dropped into the opening of the burner. This is provided with vertical perforations, and in ordinary practice it cannot be choked with grit. The purring is probably due to a rapid series of minute explosions resulting from an imperfect mixture of gas and air. At the same time there is an ingenious fitting which provides for initial pressure adjustment. Altogether, this fire marks a most important advance, and is calculated to remove what prejudices remain against the use of gas for the purpose of domestic heating.

THE SOYA BEAN.

A CORRESPONDENT writes:—The article entitled "A Milk Similar" in THE LANCET of Dec. 4th last, showing how an artificial milk can be obtained from the soya bean, has recalled to my mind an article on this "magic bean" in the *South African Year-Book* of 1914, of which the following is a short extract:—

"It has been proved, as a result of the extensive experiments during the season 1910–11, that the soya bean is a crop which can be grown throughout South Africa, and would provide a material source of wealth, not only to the farmer and the dairy and livestock industry, but to the Government railways, agricultural implement dealers, merchants, seedsmen, fertilizer dealers, saddlery, and harness and waggon manufacturers, and possibly also for coöperative companies of farmers, &c., to erect small oil mills, as in the case of Manchuria and Japan; apart from the many industries which would spring up as the result of the soya bean becoming a staple crop, as witness the following list of the many products which can be obtained from the soya bean and oil.

The bean.—Human consumption, as a vegetable, like marrowfat peas, and in preparation of soups. As a substitute for meat, specially manufactured. Manufacture of a substitute for chocolate. Preparation of macaroni. As flour for biscuits and brown bread. As artificial cream and milk. Manufacture of cheese. As a substitute for coffee. Preparation of plastic substances and artificial horn. Special biscuits and food manufactured for persons suffering from diabetes, as the beans contain no sugar or starch. As a basis in the manufacture of sauces, such as the famous Soy sauce. The beans are ground into meal for feeding cattle. In the United States the beans are fed to stallions, instead of the ordinary horse-bean (*Vicia faba equina*). For the expression of oil and manufacture of oil-cake. In China the bean cake is used as a fertilizer in sugar plantations and in the rice fields. In Japan the cake is used as manure for wheat and various other crops, even for cabbages, planted with the seed. In Europe the bean cake is largely used for feeding dairy cows and cattle. In Manchuria and Japan it is fed to cattle, horses, mules, and hogs. In Japan the beans are grown and ploughed under as a green manure crop, as well as being consumed in the preparation of human food on a large scale, which practice is spreading to Western Europe.

The oil.—Manufacture of dynamite and high explosives; soaps; linoleum; indiarubber substitute; margarine; paints and varnishes in place of linseed oil; edible goods and toilet powder; waterproof cloth, paper umbrellas, and lanterns; salad oil; lubricating oil, in China, for greasing axles and native machinery; lamp oil instead of kerosene oil (it is used on English railways for burning); the soya oil is also used for preserving sardines, and in place of lard and cotton-seed oil for cooking.

Chemical analyses of the beans made in Europe show considerable variation in the percentages of the different constituents. In 1908 the soya beans started to be exported from Manchuria to Great Britain and Europe; the price on the London market being £4 15*s.* per ton, which recently rose to £9 2*s.* 6*d.* per ton in England; the value on the spot at Hull being now given as £8 7*s.* 6*d.* per ton; the value of soya oil on the spot, crushed, is £24 10*s.*, and extracted, £23 15*s.* per ton, and of soya oil-cake, £6 15*s.* per ton."

The Report on the Trade of the Union, of which the above is an excerpt, is signed by Mr. C. du P. Chiappini, Trades Commissioner, who acknowledges that the technical details regarding the bean are based upon information supplied by Mr. A. Greville Turner, secretary to the Seed, Oil, and Cake Trade Association, Exchange Buildings, Liverpool.

THE HEART OF LIVINGSTONE.

ON Jan. 4th, in the Parochial Hall, Forest Gate, Mrs. Livingstone Wilson, the only surviving child of the great explorer, Dr. Livingstone, gave a lecture on the subject of her recent journey to Old Chitambo, in the North-East of Rhodesia, where her father's heart is buried. On her journey thither Mrs. Livingstone Wilson was joined by her son, Dr. H. F. Wilson, who is on the medical staff of the Livingstonia Mission in Nyasaland, and by her daughter, who is a nurse, the whole party trekking to Chitambo with 60 carriers. The lecturer gave many instances of native suspicion and credulity and referred to a chief who had many sick natives prescribed for, but created difficulties by insisting on himself taking a dose of every medicine ordered. At Old Chitambo an old chief called Chitend, from another village, claimed that it was in his mother's hut that Dr. Livingstone died, the claim arising from the fact that while Dr. Livingstone's followers had gone ahead to build him a grass hut, he became so ill that he had to rest under the eaves of a native hut, dying afterwards in the grass one that had been built for him. The old men declared that they remembered his followers building a stockade round the hut while they embalmed the body in salt and brandy, burying the heart under a great tree.

"FIRELESS COOKERY."

A LEAFLET on this subject, by Miss Florence Petty, has been issued by the National Food Reform Association, 178, St. Stephen's House, Westminster. The publication explains how the cooking of the contents of a saucepan brought to the boiling point may be completed by enclosing in a box packed with paper or hay. This method of preventing the rapid dissipation of heat and therefore of economising it for cooking is, of course, perfectly well known to most people, but why it is not more often employed is very puzzling. A specimen copy of the leaflet may be obtained by forwarding two penny stamps.

"THE WORST-PAID OFFICIAL."

AT the last meeting of the Ivybridge (Devon) urban council the subject of the medical officer's salary came under discussion. The chairman stated "that the medical officer was the worst paid official," and he hoped that shortly the council would give him a larger remuneration.

SOMALILAND.

Mr. G. F. Archer, C.M.G., the British Commissioner and Commander-in-Chief of the Somaliland Protectorate (which comprises an area of about 68,000 square miles on the north-eastern horn of the African continent), in his report for the year ended March 31st, 1915, writes that no reliable information is forthcoming as to the Somali population of the country at the present time, but 300,000 is given as an approximation. In Berbera, the principal town, it is estimated that the population varies from 10,000 in the hot weather—namely, May to September—to 25,000 or 30,000 in the trading season. Bulhar has also a floating population, which is rather smaller, while Zeyla varies from 5000 in the hot weather to 7000 in the remaining months of the year. A general hospital is situated at each of the three coast towns mentioned, there being accommodation for 44 beds at Berbera, and 4 each at Bulhar and Zeyla. Camp hospitals, constructed of mat huts erected on wooden framework, have been in use at each of the towns for meeting an epidemic of small-pox. They answer their purpose very well and withstand the wind far better than the tents used formerly. The aggregate number of admissions to hospitals during the year was 418 and the number of deaths 42. There is a dispensary attached to each of the hospitals, and the attendances at these during the year totalled 60,778. A small room is available at the Berbera Hospital for the purpose of blood examinations and urine testing. No culture equipment exists, but

microscopic sections can be cut and mounted and simple chemical analyses conducted. Small-pox was reported from the Hargeisa district during the year, having spread from Abyssinia, where it is endemic, but it did not reach the coast towns. Vaccine lymph has been entrusted to capable persons at such places as can be reached in the Protectorate area. Owing to the entirely nomadic conditions prevailing in the interior it has been impossible to obtain any reliable details as to results, nor has any officer remained for sufficient time at any centre of population to collect correct data. The climate of the Protectorate is chiefly remarkable for its very dry character. In the interior it is healthy, generally speaking, throughout the year, but the same can scarcely be said of the coast belt. Here, during the "kharif"—i.e., the months of June, July, August, and not infrequently half of September—the atmospheric conditions are very trying for Europeans, and the effect on the nervous system is most pronounced. Terrific gales of sand-laden wind are then prevalent and the heat is intense, with the thermometer registering 105–115° F. in the shade at midday and seldom falling below 100° at night. Most of the sickness, however, occurs during the months immediately preceding and immediately following the "kharif." During the months of November, December, January, and February the climatic conditions on the coast greatly improve.

THE LITTLE THINGS OF MEDICINE AND SURGERY.

Major McAdam Eccles's mid-sessional address delivered before the Abernethian Society on Jan. 6th was listened to with attention by the nursing staff of St. Bartholomew's Hospital, who are always present on this occasion, and a much smaller number of Bartholomew's men, mostly resident staff and fourth and fifth years' men. The subject chosen lent itself to anecdote, especially in the form of the "little things," from the time of his own medical training which had remained in the lecturer's memory: Sir William Savory's dictum, "Do not put a drain pipe in a wound like a chimney pot and expect fluid to run up hill"; Professor Howard Marsh's story of the thief descending so forcibly on to his toes from a loft where he had been stealing eggs that the astragalus shot out through his boot and the malleoli passing through the heel of his boot pinned him to the ground until the arrival of his captor; and other equally good stories. In more serious vein, the "little things" were dwelt upon which make the successful practitioner: sympathy, scrupulous nicety of dress, punctuality, orderliness. "Little business habits are easily learned, and are of much value in a professional life. Always reply promptly to letters needing an answer. Always acknowledge the receipt of a report or letter from a brother practitioner, if only by a postcard." The concluding sentence in the "sermon" for so the lecturer termed it, is worthy of being taken to heart. "To most of us our environment will consist of the minor details, and in our medical life, whether as students, practitioners, or nurses, it is assuredly the little things which tell."

"SPOONERISMS."

HAS a famous Oxford scholar been addressing a rural recruiting meeting? The *Gazette* of the 3rd London General Hospital quotes a doctor who began by calling his audience *t*ons of *s*oil, next informed them that the first thing they must learn was to *sh*out and *sc*oot, and wound up by promising his hearers that on their return in triumph all the *h*ags would be *f*lung out to welcome them.

ERRATUM.—By an error in a review last week the standard work "English Sanitary Institutions" written by that famous pioneer of public health, the late Sir John Simon, was attributed to the late Home Secretary. ∧ 332

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 12th, 1916.

Date.		Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan.	6	30·210	S.W.	...	60	57	46	51	52	Overcast
,,	7	29·766	S.W.	...	56	53	51	51	52	Raining
,,	8	30·096	W.	0·05	51	48	43	41	43	Fine
,,	9	30·370	S.	...	51	47	39	38	40	Cloudy
,,	10	30·440	W.	...	74	53	40	45	46	Cloudy
,,	11	30·236	W.	...	72	54	46	47	49	Cloudy
,,	12	30 340	W.	0·02	56	50	43	43	44	Raining

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Jan. 18th.

THERAPEUTICS AND PHARMACOLOGY (Hon. Secretaries—W. Langdon Brown, Philip Hamill, J. Gordon Sharp): at 4.30 P.M.

Sir James Mackenzie, F.R.S., will open a Discussion on "The Soldier's Heart."

Fellows desirous of taking part are requested to communicate with the Hon. Secretaries.

Wednesday, Jan. 19th.

HISTORY OF MEDICINE (Hon. Secretaries—Leonard G. Guthrie, J. D. Rolleston): at 5 P.M.

Books, MSS., &c., are on view at 4.30 P.M.

Dr. Arnold Chaplin: Mortality in the British Army 100 Years Ago.

Dr. H. Selfe Bennett: Joshua Ward.

Thursday, Jan. 20th.

DERMATOLOGY (Hon. Secretaries—A. M. H. Gray, J. E. R. McDonagh): at 5 P.M.

Exhibition of Cases (at 4.30 P.M.).

Mr. J. E. R. McDonagh and Dr. H. Spence: Cases of Syphilis treated by "Intramine."

Dr. Parkes Weber: Kaposi's so-called "Idiopathic Multiple Pigment Sarcoma"—a Case described in 1906, showing Improvement.

Dr. J. H. Sequeira: Sclerodermia with Graves's Disease.

BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—Chas. W. Buckley, J. Campbell McClure): at 5.30 P.M.

Paper:

Dr. J. Campbell McClure: Hydrological Treatment of Gastro-Intestinal Stasis.

(At 7 P.M., the members will dine together at Pagani's Restaurant, Great Portland-street, W, and members may bring guests. Members who wish to dine are requested to send their names to Dr. J. Campbell McClure, 59, Harley-street, W.)

Friday, Jan. 21st.

ELECTRO-THERAPEUTICS (Hon. Secretaries—S. Gilbert Scott, E. P. Cumberbatch): at 8.30 P.M.

Demonstration:

Sir James Mackenzie Davidson will demonstrate a "Commutator Break" for Utilising the Current at "Make" as well as the Current at "Break."

Paper:

Dr. E. P. Cumberbatch: The Use of the "Simpson Light," with a Description of the Apparatus.

Dr. Russ will give an Account of the Physical Properties of the Light. The Apparatus for the production of the Light will be shown.

A Localising Couch designed by Sir James Mackenzie Davidson will be on view.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Discussion on Gunshot Wounds of the Chest (introduced by Colonel Sir J. R. Bradford, A.M.S., Captain H. Henry, R.A.M.C., and Captain M. Davies, R.A.M.C.(T.). Lieutenant-Colonel W. H. White, R.A.M.C.(T.), Dr. S. West, Dr. M. Leslie, and others will take part in the discussion.

ROYAL METEOROLOGICAL SOCIETY, The Surveyors' Institution, 12, Great George street, Westminster, S.W.

WEDNESDAY.—7.30 P.M., Address:—Major H. G. Lyons (President): Winter Climate of the Eastern Mediterranean.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—5.30 P.M., Paper:—Dr. W. J. Penfold: The Etiology of Typhus.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics X Rays. Mr. Pardoe: Operations.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).
TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).
WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).
FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
TUESDAY.—6 P.M., Dr. W. Griffith: The Skin Eruptions of Syphilis.
THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Vesicular and Bullous Diseases and their Treatment.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
TUESDAY.—3 P.M., Prof. C. S. Sherrington: The Physiology of Anger and Fear. (Lecture I.)
FRIDAY.—5.30 P.M., Prof. Sir James Dewar: Problems in Capillarity.

GRESHAM LECTURES, Gresham College, Basinghall-street, E.C.
TUESDAY, WEDNESDAY, THURSDAY, AND FRIDAY.—6 P.M., Dr. H. Campbell: Dietetics.

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1915 were given in THE LANCET of Dec. 25th, 1915.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1915 will be ready shortly. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

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THE Secretary of the War Office has issued the following order:—

The public are informed that on and after Saturday, November 6th, newspapers, magazines, books, and other printed publications (other than trade circulars) will not be sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. Persons desiring to send newspapers, &c., to neutral European countries should, therefore, give their orders for execution to publishers or newsagents who have obtained such permission.

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